



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Reexamination of:	)	
	)	
Patent Number: 6,202,051	)	Group Art Unit: 3625
	)	
Confirmation Number: 6698	)	Examiner: Yogesh C. Garg
	)	
Filing Date: March 29, 2004	)	
	)	
For: FACILITATING INTERNET	)	
COMMERCE THROUGH	)	
INTERNETWORKED	)	
AUCTIONS	)	

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION UNDER 37 C.F.R. § 1.132 OF ALFRED C. WEAVER, PH.D.  
SUPPORTING PATENTABILITY OF U.S. PATENT NO. 6,202,051 AND  
TRAVERSING REJECTIONS IN OFFICE ACTION DATED JANUARY 31, 2005**

I, Alfred C. Weaver, Ph.D., being over eighteen years of age, declare, depose and state the following:

**I. BACKGROUND**

1. I have been asked by the assignee MercExchange to provide my expert opinion in support of the patentability of the claims and traversing the claim rejections set forth in the Office Action dated January 31, 2005 in the above-captioned reexamination application. I am being compensated for my time at the rate of \$250 per hour.

2. In terms of my background and experiences which qualify me as an expert in the field of the claimed inventions, I am a Professor of Computer Science at the University of Virginia. My business address is 151 Engineer's Way, P.O. Box 400740, Charlottesville,

Virginia 22904. I earned a Ph.D. in Computer Science in 1976 from the University of Illinois. I also obtained a Master of Science in Computer Science degree from the University of Illinois in 1973 and a Bachelor of Science in Engineering degree from the University of Tennessee in 1971.

3. I have been teaching computer science at the University of Virginia since 1977, during which time I have witnessed tremendous changes in the impact of computers in our everyday lives. One of the changes I have seen is the widespread utilization of the Internet for use in commerce.

4. I have been interested in computer networks since my early days in the field. Therefore, in addition to my teaching activities at the University, I am the Director of the University of Virginia Computer Science Department's Computer Networks Laboratory, a research laboratory that was created to study operations of computer networks, including networks such as the Internet.

5. Additionally, I am the Director of the University of Virginia's Internet Commerce Group, a group designed to partner University Personnel with businesses and government to help build software products for Internet commerce.

6. I have authored or co-authored numerous books or book chapters in the computer science field and have authored or co-authored over 100 published articles on various topics related to computer science, computer systems, computer networks, search agents, databases, the Internet and electronic commerce, among other topics.

7. I am currently on the editorial boards of the *IEEE Transactions on Industrial Electronics* journal, and the *IEEE Computer* magazine.

8. I have presented papers orally at numerous conferences and have served as Program Chair of a number of conferences around the world. I was the president of the IEEE Industrial Electronics Society from 1994-95. I was the Keynote Speaker at the IEEE Industrial Electronics Annual Conference IECON '96, held in Kauai, Hawaii in December 1996. The subject of the speech was "Electronic Commerce on the Internet." Additionally, I am a named inventor on one U.S. Patent for a computer-based process control system.

9. I am a Fellow of the IEEE, an honor awarded to less than two percent of the IEEE membership, and I am one of the Distinguished Lecturers recognized by the IEEE Industrial Electronics Society.

10. I have been an invited guest lecturer at numerous meetings sponsored by various corporations around the world. For instance, I spoke on "Reliable Multicast and Reliable Group Management" for a meeting held at Sun Microsystems in Palo Alto, California in July, 1999. I gave a presentation entitled "Xpress Transport Protocol" at a meeting sponsored by General Electric Research and Development Laboratory, held in Schenectady, New York, in December 1996.

11. I have also had the opportunity to consult with and/or work in the commercial sector. For example, I have received a research grant from Microsoft for my current work in connection with development of a solution to the problems associated with the privacy and security of medical data. In the past, I've consulted for General Electric, Lockheed Martin, Honeywell, Raytheon, and others. Additionally, I founded five companies of my own which were focused on ecommerce. I was involved in all aspects of the life cycles of these companies from raising start-up capital funding, to designing and developing products, to attempting to commercialize these products in the marketplace.

12. I am the Lucian Carr III Professor of Engineering and Applied Science at the University of Virginia. I am a member of the Promotion and Tenure Committee of the University of Virginia. I served as the Chairman of the Department of Computer Science during 1984-85. In 1998-1999, I served as the Chairman of the Promotion and Tenure Committee for the School of Engineering and Applied Science at the University of Virginia. Currently, I am serving as the Director of the Computer Science Corporate Partners Program for the Department of Computer Science at the University.

13. I was qualified by the U.S. District Court for the Eastern District of Virginia as an expert in the field of computer science and I testified at trial in *MercExchange, L.L.C. vs. eBay, Inc. et al.*, Civil Action No. 2:01 cv 736 (E.D.Va.). I testified on behalf of the patent owner MercExchange on the issues of infringement as well as validity of the MercExchange patents. After a five-week trial, the jury found that eBay and its wholly-owned subsidiary Half.com willfully infringed 25 claims of U.S. Patent No. 5,845,265 (the "'265 Patent"), assigned to MercExchange. The jury also found each of the patent claims not invalid based on my testimony.

14. Also, I was recently qualified as an expert witness in the field of computer science in the patent infringement matter of *ePlus, Inc. v. Ariba, Inc.*, Civil Action No. 1:04-cv-612 (E.D.Va) and tried before a jury in January and February of this year. That action involved software processes operating over a network, including the Internet. Based on my testimony, the jury found all asserted claims to have been willfully infringed and not invalid.

15. I was also qualified to testify at trial as an expert the field of computer science on behalf of the Plaintiffs in the case of *John Lynch and First Union Capital Markets v. W. Scott Prendergast*, Case No. 00-1433-A (E.D.Va.) That case involved a claim of data theft by a

former employee of the Plaintiffs, Mr. Prendergast. In that case, I analyzed data recovered from Mr. Prendergast's computer to determine that it was misappropriated from the Plaintiffs' systems. Based on my testimony, a verdict was returned in favor of the Plaintiffs.

16. My testimony was also noted in the recent Opinion of the United States Court of Appeals for the Federal Circuit in *MercExchange, LLC v. eBay, Inc. and Half.com, Inc.*, Appeal 03-1600, -1616. The Federal Circuit found that my testimony provided substantial evidence such that a reasonable jury could conclude that the '265 Patent was both willfully infringed and not invalid. I understand that MercExchange is submitting that Opinion, as well as the associated briefs of the parties, in an Information Disclosure Statement in this reexamination proceeding.

17. My fields of expertise include computer science, computer systems, computer network architecture, network protocols and Internet and electronic commerce, among others. A copy of my *curriculum vitae* is attached as Exhibit A to this Declaration.

## **II. FIELD OF THE INVENTION AND PERSON OF ORDINARY SKILL IN THE ART**

18. It is my understanding that my analyses regarding the patentability of the claims are to be undertaken from the perspective of what would have been known or understood by a person of ordinary skill in the relevant art at the time of the inventions claimed in this patent application. Therefore, I will define the relevant field of the inventions and the level of ordinary skill in that field at the time of the claimed inventions.

19. It is my opinion that the relevant field of the inventions claimed in U.S. Patent No. 6,202,051 (the "'051 Patent") and, consequently, in the above-referenced reexamination application, is the field of "computerized systems and processes for facilitating Internet

commerce through Internetnetworked auctions.”

20. Based on my study of the '051 Patent specification and claims, and over 25 years of experience in the computer science field following completion of my Ph.D., it is my opinion that a person of ordinary skill in the field of the inventions as of the priority date of the '051 Patent (April 26, 1995) would have had an undergraduate Bachelor of Science degree in computer science, approximately one year of practical programming experience and an understanding of basic business transactional principles. I also base my opinion on my actual experiences in starting up ecommerce companies in the approximate time frame of the inventions at issue. Additionally, most of my senior level computer science students take on outside work while in college and, therefore, would be appropriate persons to think of when viewing this “person of ordinary skill” in the field of these inventions.

21. It is from the perspective of this person of ordinary skill in the art that I will assess the prior art and claim rejections set forth in the January 31, 2005 Office Action.

### **III. UNDERSTANDING OF THE LAW TO BE APPLIED TO DETERMINE PATENTABILITY**

22. I am informed and understand that, in order to be considered prior art which would anticipate or render a claimed invention obvious and unpatentable, a reference must be enabling and must describe the claimed invention sufficiently to have placed it in the possession of a person of ordinary skill in the field of the invention. In other words, the disclosure within the “four corners” of the alleged prior art document must be sufficiently detailed to enable a person of ordinary skill in the art in the relevant field to make and use the claimed invention.

23. Furthermore, it is my understanding that to anticipate a patent claim under 35 U.S.C. § 102, a single asserted prior art reference must disclose each and every element of the

claimed invention, either explicitly or inherently to a person of ordinary skill in the art. Also, I understand that in order for a reference to be an anticipating reference, it must describe the claimed subject matter with sufficient clarity to establish that the subject matter existed and that its existence was recognized by persons of ordinary skill in the field of the invention. In addition, I am informed and understand that in order to establish that an element of a claim is “inherent” in the disclosure of an asserted prior art reference, the extrinsic evidence (or the evidence outside the four corners of the asserted prior art reference) must make clear that the missing element is the inevitable outcome of the process and/or thing that is explicitly described in the asserted prior art reference, and that it would be recognized as necessarily present by persons of ordinary skill in the relevant field. Inherency, I understand, however, may not be established by mere probabilities or possibilities. In other words, the mere fact that a certain thing may result from a given set of circumstances is not sufficient. I am further informed and understand that this “inherency” concept is inapplicable to an obviousness analysis and may only be utilized in challenges based on anticipation pursuant to Section 102. It is my understanding that the Examiner has not rendered a Section 102 anticipation rejection in this Office Action.

24. I am also informed and understand that even though a prior art reference does not fully anticipate a claim, a claim may, nonetheless, be rendered obvious to one of ordinary skill in the art if the differences between the subject matter set forth in the patent claim and the prior art are such that the subject matter as a whole of the claim would have been obvious at the time the claimed invention was made. In addition, it is my understanding that obviousness is a determination of law based on various underlying determinations of fact. In particular, these underlying factual determinations include (1) the scope and content of the prior art; (2) the level of ordinary skill in the art at the time the claimed invention was made; (3) the differences

between the claimed invention and the prior art; and (4) the extent of any proffered objective indicia of non-obviousness. I understand that the objective indicia which may be considered in such an analysis include commercial success of the claimed invention (including evidence of industry recognition or awards), whether the invention fills a long-felt but unsolved need in the field, the failure of others to arrive at the invention, evidence of copying, unexpected results, and initial skepticism of others in the field, among others.

25. To ascertain the scope and content of the prior art, it is necessary to first examine the field of the inventor's endeavor and the particular problem with which the inventor was involved at the time the invention was made, which I have set forth above. Moreover, a determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the claimed invention. Instead, it is my understanding that in order to render a claim unpatentable as being obvious from a combination of references there must be some evidence within the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination in a way that would produce the claimed invention. In addition, it is my understanding that in order to find a claim unpatentable for obviousness, there must be a finding that each element in each limitation of the claim is disclosed or taught by the asserted combination of prior art references or elsewhere in the relevant prior art.

26. In addition, it is my understanding that the issue of whether a claim meets the written description requirement of Section 112 of the Patent Act must be viewed from the standpoint of one of ordinary skill in the art. It is my understanding that to satisfy the written description requirement, a patent applicant must provide a disclosure such that one of ordinary skill in the art would believe that the inventor was in possession of the claimed invention at the



time the patent application was filed. In other words, the written description requirement is satisfied when the text and drawings of the patent specification, taken as a whole, convey with reasonable clarity to a person of ordinary skill in the art that the inventor was in possession of the claimed invention at the time the application for the patent was filed. The specification is not required to include the identical wording used in the claims.

27. It is my understanding that Section 112, second paragraph, of the Patent Act requires that a claim “particularly point out and distinctly claim[] the subject matter which the applicant regards as the invention.” It is my understanding that whether a claim particularly points out and distinctly claims the subject matter of an invention depends on whether a person of ordinary skill in the art would understand what is being claimed, including the bounds of the claim, read in light of the specification. If a person of ordinary skill in the art would understand when a claim element is satisfied, then the claim is sufficiently definite.

28. I am informed and understand, however, that Section 112 issues are not within the scope of reexamination pursuant to 35 U.S.C. §§ 301 and 302 which state that a request for reexamination may only be made on the basis of prior art consisting of patents or printed publications. *See also* 37 C.F.R. §§ 1.501, 1.510, 1.552(a); M.P.E.P. § 2258(I)(G), (II) (“Original patent claims will be examined only on the basis of prior art patents or printed publications applied under the appropriate parts of 35 U.S.C. §§ 102 and 103.” “Consideration of 35 U.S.C. 112 issues should, however, be limited to the amendatory (*e.g.*, new language) matter [in new or amended claims].”)

29. I will analyze the claims of the '051 Patent and the cited prior art using these principles.

#### IV. THE CITED ART DOES NOT RENDER THE CLAIMS OBVIOUS

30. In the January 31, 2005 Office Action, the Examiner contends that claims 1-5, 10 and 12-35 are unpatentable under 35 U.S.C. § 103(a) as obvious over the Business Wire article dated April 24, 1995 entitled "*Save the Earth Foundation: Internet Online Rock and Roll Auction Celebrating Earth Day is Declared Open to the World For One Month*" ("*Save the Earth*"), in view of U.S. Patent No. 5,826,241 to Stein et al. (the "Stein Patent"), in view of the article entitled "*Computer Museum Holds an Internet Auction*" published in the May 9, 1994 issue of Open Systems Today ("*Computer Museum*"), and further in view of the article entitled "*From Army Knives to Gold Coins*" from the July 28, 1986 issue of the Memphis Business Journal ("*From Army Knives to Gold Coins*").

31. The Examiner further contends that claims 6-8, 11 and 36-51 are unpatentable under 35 U.S.C. § 103(a) as obvious over the "*Save the Earth*" article, in view of the Stein Patent, in view of U.S. Patent No. 4,789,928 to Fujisaki (the "Fujisaki Patent"), in view of the *Computer Museum* article, and further in view of the *From Army Knives to Gold Coins* article.

32. The Examiner also contends that claim 9 is unpatentable under 35 U.S.C. § 103(a) as obvious over the *Save the Earth* article, in view of the Stein Patent, in view of the Fujisaki Patent, in view of the *Computer Museum* article, in view of the *From Army Knives to Gold Coins* article, and further in view of U.S. Patent No. 5,664,111 to Nahan et al. ("the Nahan Patent").

33. Additionally, the Examiner contends that claim 52 is unpatentable under 35 U.S.C. § 103(a) as obvious over the *Save the Earth* article, in view of the Stein Patent, in view of the Fujisaki Patent, in view of the *Computer Museum* article, in view of the *From Army Knives to Gold Coins* article, in view of the Nahan Patent, and further in view of U.S. Patent 5,220,501 to Lawlor et al. (the "Lawlor Patent").

34. I note that, with the exception of the Stein and Lawlor Patents, all of the references cited by the Examiner in the January 31, 2005 Office Action were cited and considered by the Patent Office during the original prosecution of the '051 Patent. The Patent Office allowed the '051 Patent's claims over these references.

**A. Claims 1-5, 10 and 12-35 Are Not Obvious From the Examiner's Combination of References**

35. In my opinion, the *Save the Earth* article fails to disclose or suggest each and every element of independent claims 1, 10 or 12.

36. The Examiner contends that the *Save the Earth* article discloses an Internet auction wherein items are presented to be viewed over the Internet; items for auction are received and identified as to who has ownership of the items; the auctions are scheduled; items for auction are presented via the world wide web; and participants are able to receive bids on items over the Internet.

37. Contrary to the Examiner's contention that the *Save the Earth* article discloses an automated auction method performed by a computer-based auction system including the step of "receiving information from the seller including a description of an item offered for auction by the seller" as claimed in claims 1 and 15, in my opinion, a person of ordinary skill in the art would understand from the article that the Save the Earth Foundation, the auction host, owned or possessed all of the merchandise being auctioned. Individual sellers could not list items to be auctioned. There is no disclosure or suggestion in the article that the Foundation's auction system received, via an automated process step, information about items to be auctioned from individual sellers, as required by the claims.

38. Moreover, contrary to the Examiner's contention that entertainers' autographs on items to be auctioned were indicative of ownership of the items, in my opinion, the autographs were simply for enhancement of the value of the items and did not indicate that the entertainers who had autographed the items were the sellers who had listed those items for sale via auction. As the article explains, all of the proceeds from the sales of the auctioned items were going to the Foundation rather than to the entertainers who autographed the items. ("The auction will serve several purposes. . . . First, to raise money for the Save the Earth Foundation's . . . grant program.") Additionally, the fact that the items were physically autographed confirms my opinion that individual sellers did not electronically transmit information about the items to the auction host via an automated process step, nor did the Foundation's auction system receive information about the items from individual sellers via an automated process step.

39. The *Save the Earth* article also fails to disclose or suggest several other elements of the claims. As the Examiner concedes, there is no disclosure or suggestion in the *Save the Earth* article of the Foundation's auction system performing an automated method which includes the step of "creating a data record containing a description of the item based on information received from a seller" wherein the data record "connote[s] an ownership interest by the seller in the item," as required by claims 1 and 10. Nor is there any disclosure of an item data record "being stored in a computerized electronic database maintained by the computer-based auction system" as required by claims 1 and 10. There is no disclosure whatsoever in the *Save the Earth* article about the components of the Foundation's auction system much less whether the system included an electronic database of item records.

40. The Examiner also concedes that the *Save the Earth* article fails to disclose or suggest an automated method performed by a computer-based auction system for enabling a

seller to auction an item via the Internet that includes a step whereby the computer-based auction system requires a seller to establish a seller's account, as is required by claims 1, 10 and 12. The Examiner asserts, however, that it is inherent that all participants in auctions should have accounts.

41. I disagree with this position. Indeed, there is no need for sellers' accounts in the auction system described in the *Save the Earth* article because there are no individual sellers. All of the auctioned items are owned or possessed and auctioned by a single host entity, the Save the Earth Foundation. Individual sellers could not list items to be auctioned by the Foundation's system. Thus, there is no need for the auction system to collect any listing fees or commissions from sellers and no need for automated sellers' accounts. Moreover, since there are no seller's accounts established by the Foundation's system, there are no seller's accounts to be charged a fee, as required by claim 1. And, there are no seller's accounts to be debited for a fee amount corresponding to a result of the auction, as required by claims 10 and 12.

42. The Examiner also contends that the Stein Patent is in the same field of endeavor as the claimed inventions and that the Stein Patent discloses the seller's account in accordance with the claims.

43. I disagree with the Examiner's contention that the system in the Stein Patent is in the same field of endeavor as the applicant's invention. As explained above, a person of ordinary skill in the art would understand that the field of the present application is computerized systems and processes for facilitating Internet commerce through Internet networked auctions. The Stein Patent does not relate to Internet auctions at all and, therefore, is not analogous art.

44. Moreover, I disagree with the Examiner's assertion that the Stein Patent discloses "requiring the seller to establish a seller's account, the seller's account being based at least on the

seller's identity and a financial instrument associated with the seller" as recited in claims 1, 10 and 12. Instead, the accounts described in the Stein Patent are anonymous accounts. The Stein Patent describes an account 100 which includes a cardnumber 102 and an email address 104. Col. 5, ll. 9-14. Basing an account on an email address is not the same as basing the account on the seller's identity. An email address can be anonymous, for example, a hotmail address. Moreover, in the system described in the Stein Patent, the cardnumber 102 associated with the account 100 "*bears no deducible relationship to any financial artifact, such as a credit cardnumber, a checking account number, nor to any email address.*" Col. 5, ll. 17-21. Thus, the Stein Patent teaches away from establishing an account based on a financial instrument associated with a seller.

45. The seller's accounts of the claims of the present application are automated accounts created by the computer-implemented auction system. One benefit of establishing these automated seller's accounts is to verify the seller's identity and that the seller is a bona fide user of the auction system who is authorized to list items for sale via the auction system. *See, e.g., '051 Patent, Col. 9, ll. 20-24.* Another benefit of the automated seller's accounts of the present invention is minimize the risk to the auction host of nonpayment. '051 Patent, Col. 12, ll. 30-55. Because the auction host has verified the seller's identity and has established an automated account for the seller that is tied to a financial instrument associated with the seller, the auction host is assured of payment of the seller's fees for the system's listing and auctioning of the seller's item even if the seller's item is not sold or the buyer does not pay the seller. Moreover, the auction host is assured of an accounting of seller's fees due immediately upon termination or conclusion of the auction because the computer-implemented auction system can automatically debit the seller's account upon such termination or conclusion of the auction. The

auction host need not await the buyer's payment to the seller. This is a significant advantage in a system where a large number of items are being auctioned simultaneously on a daily basis by a network of sellers.

46. In contrast to the computer-implemented seller's accounts of the present invention, the Stein Patent is directed to a system wherein the account holder's identity and financial information is not accessible to the Internet merchants, and is not deducible from the email addresses or cardnumbers associated with the accounts. Col. 5, ll. 17-21; 42-67. The Stein Patent teaches that the identity and financial information for processing a transaction is stored in a back end system which is not connected to the Internet. Col. 5, ll. 45-67. Thus, instead of using a seller's account to verify that the seller is a bona fide system user, as taught by the present invention, the Stein Patent teaches away from this concept by describing anonymous accounts which isolate the identity and financial information of an account holder so that it is not accessible by the Internet merchant.

47. Moreover, a buyer can refuse to pay for an item and, in such event, the account will not be charged. *See, e.g.*, Stein Patent, Col. 2, ll. 19-27. ("If the buyer's cardholder account status 106B is 'suspended', the seller knows that the buyer 20 has not been responsive to recent transaction attempts. The seller 28 may still decide to send the information product 26 to the buyer 20 and a funds transfer will be processed. No guarantee of payment is made however." Col. 7, ll. 20-25.)

48. Additionally, it is not until the back end program 92 has processed accumulated transactions for a buyer that it calculates a net settlement due to a seller by subtracting a service charge for use of the system from the buyer's payment and crediting the seller's settlement queue. Instead of crediting the seller's settlement queue an amount due to the seller upon

conclusion of each transaction, the Stein Patent's system batches accumulated payment transactions into a single off-Internet transaction. Col. 9, l. 49 to Col. 10, l. 17. Thus, a payment due to an Internet seller "may be held for a period of 60 days before it is combined with the other accumulated transactions and paid to the seller by means of the seller's indicated off-Internet payment method." Col. 11, ll. 2-28. The fact that the seller, or Internet merchant, carries the risk of non-payment was touted as an advantage of the Stein Patent's system. This is directly contrary to the claimed invention in which the Internet auction system charges the seller's account immediately upon the conclusion of an auction for the seller's item.

49. I also disagree with the Examiner's contention that a person of ordinary skill in the art would have been motivated to modify the system described in the *Save the Earth* article to include the accounts described in the Stein Patent. First, since the system described in the Stein Patent is not an Internet-based auction system, a person of ordinary skill in the art implementing the system described in the *Save the Earth* article would not have consulted the Stein Patent at all. Moreover, since there is no need for seller's accounts in the auction system described in the *Save the Earth* article because individual sellers could not initiate auctions for items, a person of ordinary skill in the art would not have considered modifying the *Save the Earth* system to provide seller's accounts. Nor would a person of ordinary skill in the art have combined the two references to arrive at the claimed combination including seller's accounts based on the seller's identity and a financial instrument associated with the seller because the Stein Patent teaches away from such an account.

50. The process performed by the system described in the *Save the Earth* article also lacks the step of "generating an identification code to uniquely identify an item," as required by claim 1. There is no discussion whatsoever of the use of identification codes in connection with



the auctioned items. The Examiner concedes this deficiency and instead relies upon the system described in the *From Army Knives to Gold Coins* article to fill these gaps.

51. However, in my opinion, a person of ordinary skill in the art would not understand the system described in the *From Army Knives to Gold Coins* to satisfy this claim element. Once again, the ACORN system described in this article is not one in which an individual seller may electronically post information to the auction system to list an item and initiate an auction for an item. Rather, messages received by the auction host from sellers were kept private until they were read by a human system operator, either Mr. Blankley or Mr. Mintz, and Mr. Blankley or Mr. Mintz decided to transfer them to the network. ("Messages are completely private, Mintz says, until he or Blankley read them and transfer them to the network.") In addition, sellers physically ship coins desired to be auctioned to Messrs. Blankley and Mintz. Messrs. Blankley and Mintz check the coins for authenticity and accuracy of the seller's asking price before information about the coins is transferred to the auction system. If the coin is not acceptable, Blankley and Mintz ship it back to the seller.

52. The system described in the *From Army Knives to Gold Coins* article therefore differs from one in which the computer-based auction system receives electronic information from the seller about an item and generates a data record for that item based on the item information transmitted by the seller.

53. Nor does the computer-based auction system of this article include a step wherein the auction process is scheduled to initiate and terminate automatically, as required by claims 1, 10 and 19. Instead, Messrs. Blankley and Mintz determine the initiation and termination of the auctions.

54. Moreover, there is no teaching or suggestion in the article of a computer-based auction process which includes a step of establishing a seller's account nor a step of debiting or charging a fee to the seller's account as required by the claims at issue. Again, the system is one in which a single entity, Nemo's, is the only entity auctioning items. There was no need for the claimed seller's accounts. The seller's bona fides were confirmed by the system's physical possession of the coin being auctioned and by virtue of the operators of the auction physically inspecting the coin. Moreover, the article fails to disclose how sales commissions were collected by Messrs. Blankley and Mintz. Based on the time frame in which the article was published, it is likely that the process of charging a commission to a user of the system was a manual process rather than an automated one.

55. In addition, although the article describes the use of a database of items, it fails to disclose or suggest a step of the process performed by the computer-based auction system wherein the system "present[s] the item for auction to an audience of participants through a worldwide web mapping module executing in conjunction with the computerized database, the worldwide web mapping module translating information from the data record to a hypertext markup language format for presentation through the Internet," as required by claims 1 and 10. Nor did the system "facilitat[e] Internet-based auctions" as recited in claim 12. According to the article, the ACORN system did not operate over the Internet at all. Indeed, at the time the article was published, the Internet was not available to private commercial entities nor had the World Wide Web been invented. The ACORN system was accessed via "a toll-free [telephone] number [which] connect[ed] the user with the [system] database."

56. Because the Examiner concedes that the *Save the Earth* article does not disclose an automated method performed by a computer-based auction system which includes the steps of

“terminating the auction for the item when the auction process encounters predetermined criteria,” and “notifying a winning auction participant that the winning auction participant has entered a high bid in the auction process,” as required by claim 1, or the steps of “terminating the auction . . . when the auction process reaches a predetermined termination point” and “notifying a winning auction participant of a successful high bid” as claimed in claim 10, he cites the *Computer Museum* article for this disclosure.

57. I disagree with the Examiner’s contentions as to the teachings of the *Computer Museum* article. First, there is no discussion in this article of predetermined criteria that cause the computer-based auction system to terminate the auction process. The article is silent as to how auctions on items were initiated or terminated. In contrast, the system of the claimed invention is one wherein an individual seller can electronically transmit item information to the computer-based auction system including information for an auction start time and date which information is then included by the auction system in the data record for the item. (’051 Patent, Col. 5, l. 53-Col. 6, l. 11.) Moreover, the seller can electronically transmit item information to the computer-based auction system which includes criteria for termination of the auction for the item such as a predetermined amount of time or a reserve price that must be exceeded. *See, e.g.*, ’051 Patent, Col. 6, ll. 39-42; Col. 5, ll. 62-65; Col. 10, l. 56 to Col. 11, l. 6.

58. Moreover, the auction system described in the *Computer Museum* article is not one where individual sellers can electronically transmit information about items they wish to list for auction via the system. Instead, the auction host was the only entity that listed items to be auctioned. Thus, there is no concept in the system described in the *Computer Museum* article of a seller electronically transmitting item information to the auction system including information for determining the initiation or termination of the auction, as required by the claims of the

present invention. Moreover, because individual sellers could not list items to be auctioned by the system, there is no disclosure of, nor any need for, the system to establish any sellers accounts.

59. For all of the reasons set forth above, the combination of the *Save the Earth*, *Computer Museum* and *From Army Knives to Gold Coins* articles and the Stein Patent relied upon the Examiner fails to disclose or suggest each and every element of independent claims 1, 10 and 12. And, because this combination fails to disclose or suggest each and every element of independent claims 1, 10 and 12, it follows that the combination similarly fails to disclose or suggest each and every element of claims 2-5 which depend from claim 1 and claims 13-35 which depend from claim 12.

60. Additionally, with respect to claims 2 and 3, none of the cited references discloses or suggests a computer-based auction system which conducts an automated auction process which includes the additional step of "accepting payment information from an auction participant before accepting bids at the auction process from the auction participant," as recited in claim 2. Claim 3 further recites a step of "processing the credit card payment information to authorize payment before accepting a bid from the auction participant." The Examiner contends that the Stein Patent discloses such a process.

61. I disagree with this contention. The Stein Patent teaches away from such a process. Instead, transactions are accumulated for processing at a later time, off-line rather than via the Internet. Col. 9, l. 49 to Col. 10, l. 17. Only when the accumulated charges for a participant reach a threshold amount or are a certain number of days old does the back end program 92 batch the accumulated transactions and transmit a single transaction to the credit card network for processing. In some cases, a buyer's credit card may have expired or been

cancelled because of the delay in processing, in which case the seller will not receive payment even though the seller may have already transferred the product to the buyer. Col. 7, ll. 20-25. Moreover, as set forth above, the Stein Patent's system could not verify a participant's bona fides prior to accepting a bid on an auction item using the system's accounts since the participant's identity and financial instrument were not associated with the account.

62. With regard to claim 4, the Examiner recognizes that none of the cited references explicitly discloses a process performed by a computer-based auction system which includes the step of "contracting with the seller to create a binding offer to auction the item through [the] auction process" as required by that claim. The Examiner contends, however, that such a step is inherent in all auctions.

63. I disagree with this contention. First, since none of the cited references describes a computer-based auction system wherein individual sellers can electronically post item information to the auction system to initiate auctions for the items, there is no need for the process performed by these systems to have a step wherein the computer-based auction system contracts with the seller according to the claim. As discussed above, the Stein Patent does not describe an auction system at all. The remaining references all relate to single-entity auction systems wherein the auction host either owns or possesses all of the items to be auctioned.

64. I also disagree with the Examiner's contention that such a process step is inherent in the ACORN system described in the *From Army Knives to Gold Coins* article. In fact, the auction system described in this article teaches away from such a process step since the system operators themselves may reject an item that a user wishes to auction if it is unacceptable and may ship it back.

65. The Examiner asserts that the article's reference to registration of a coin by the Registered Coin Trading Floor prior to its auction satisfies this claim element. However, the article's reference to registration of a coin was in contrast to the way the ACORN system worked because the article states that the "ACORN [system] handles unregistered coins..." Moreover, this registration process is not related to "contracting with the seller to create a binding offer to auction an item," as recited in the claim. It is simply a process for identification and verification of authenticity of an item. It has nothing to do with ensuring that the seller follows through with a transaction. In fact, the ACORN system did not require such a process step since Messrs. Blankley and Mintz had physical possession of the items to be auctioned and could ensure their delivery to a buyer.

66. With respect to claim 5, the Examiner concedes that the *Save the Earth* article fails to disclose an automated process performed by a computer-based auction system which includes the step of "providing payment instructions to the winning auction participant." The Examiner contends, however, that the auction system described in the *Computer Museum* article performs such a step.

67. I disagree. The *Computer Museum* article states that participants "with winning bids were contacted by the museum and the museum arranged for payment and delivery." A person of ordinary skill in the art would understand from this statement that human employees of the museum contacted winning participants via some off-line method such as a telephone, rather than the contact being conducted by the computer-based auction system, particularly since the article specifically references other functions that were performed by the computer-based auction system. For example, the article specifically states that "participants were notified automatically by the auction software if their bids were accepted, or if someone had outbid them, or if the item

was no longer available.” The article also specifically states that participants could submit bids via email. But, the article does not state that winning bidders were notified via email, or automatically by the auction software.

68. With respect to claim 16, the Examiner contends that the *Save the Earth* article describes a computer-implemented method of facilitating Internet-based auctions which includes the step of receiving item information from a seller including a description of an item offered for auction by the seller which includes an item category designated by the seller, as recited in claim 16.

69. I disagree. As set forth above, individual sellers could not transmit item information to the Save the Earth Foundation’s auction system. The Foundation was the only entity offering items for auction via the system. Therefore, the computer system never even received item information transmitted electronically from individual sellers, much less item information which included an item category designated by the seller.

70. For the same reasons discussed above with respect to claims 1-5, the cited combination of references fails to disclose or suggest each and every element of claims 17-19.

71. Since the cited combination of references fails to disclose or suggest each and every element of claims 12, 18 and 19, it follows that this combination of references also fails to disclose or suggest each and every element of claim 20 which depends from claims 19, 18 and 12.

72. With respect to claims 21-22, the Examiner concedes that the *Save the Earth* article does not disclose a computer-based auction process wherein the auction is terminated upon the receipt of a final high bid that meets a seller-specified reserve price. The Examiner

asserts, however, that these claim elements are taught in the system disclosed in the *Computer Museum* article.

73. I disagree. As I explained above, neither the system described in the *Save the Earth* article nor that in the *Computer Museum* article were ones wherein individual sellers could electronically transmit information to the computer-based auction system relating to items such sellers wished to auction via the systems. The auction hosts were the only entities auctioning items via these systems. Claims 21 and 22 depend from claims 12, 18 and 19 which all require user-initiated auctions wherein the auction system receives item information electronically transmitted from individual sellers relating to items offered for auction by the sellers. According to the claims, included in the item information received by the computer-based auction system from the individual sellers is a seller-specified reserve price. No such system is disclosed or suggested in either the *Save the Earth* or *Computer Museum* articles.

74. For the same reasons set forth above concerning claims 1-5, the cited combination of references fails to disclose or suggest each and every element of claim 23.

75. With respect to claims 24 and 25, the Examiner concedes that the *Save the Earth* article fails to disclose or suggest a computer-based method of facilitating Internet-based auctions which includes the step of debiting a seller's account for a fee amount wherein the fee amount is based, at least in part, on a final sales price of the item auctioned, or the step of debiting a seller's account for a fee amount wherein the fee amount represents a seller's commission paid to an entity hosting the Internet-based auction, as required by claims 24 and 25. However, the Examiner asserts that these claim elements are satisfied by the system described in the *From Army Knives to Gold Coins* article.



76. I disagree. As I explained above, a person of ordinary skill in the art would not have been motivated to modify the system described in the *Save the Earth* article to include the claimed automated seller's accounts. There was no need in the *Save the Earth* system to have automated seller's accounts because individual sellers could not offer items for auction via the system. Nor does the *From Army Knives to Gold Coins* article disclose or suggest the implementation of automated seller's accounts in accordance with the claims, for all of the reasons set forth above. There is no discussion whatsoever in the article concerning how Messrs. Blankley and Mintz collected the commissions due.

77. For the same reasons set forth above concerning claims 1-5, the cited combination of references fails to disclose or suggest each and every element of claims 31-35.

78. Moreover, with respect to claim 33, the Examiner has failed to put forth a showing that any of the cited references discloses or suggests the additional recited elements requiring that the item information received by the computer-based auction system comes "from a computer system independently operated by the seller" or wherein "the Internet-based auction for the seller's item is initiated while the item remains outside of the first entity's [the auction host entity's] control." Indeed, as set forth above, none of the cited references discloses or suggests an auction system wherein item information is received from a computer system independently operated by the seller. Moreover, in each of the cited references that relates to an auction system, the auctions were conducted while the items being auctioned were in the auction host entity's possession, so they explicitly taught away from the invention of claim 33. For the same reasons, the references cited by the Examiner also fail to disclose or suggest, either alone or in combination, each and every element of claim 48.

79. The Examiner states that he cannot find support in the '051 Patent's specification for the limitation of claim 29 which recites that the "debiting, [of] the seller's account occurs prior to the conclusion of the auction."

80. As stated above, I am informed and understand that Section 112 issues are not appropriate in reexamination proceedings. Nevertheless, in my opinion, a person of ordinary skill in the art would have recognized that the '051 Patent specification as a whole adequately describes an auction process wherein the step of "debiting the seller's account occurs prior to the conclusion of the auction" and that the inventor was in possession of this invention at the time the application was filed.

81. A person of ordinary skill in the art would understand from the specification that once the computer-based auction system establishes an account for a participant that can be debited and credited with the funds used and generated with the participant's transactions (Col. 5, ll. 16-19), that participant's account may be debited for fees relating to various services offered by the auction system other than fees which are based on the result of an auction of an item. For example, the specification explains that:

[A] consignment node user may sell virtual advertising space or a central master node, *e.g.*, the franchiser, may coordinate the sale of advertising space on a pool of consignment nodes to reach target market participants. For example, if a participant has purchased or speculated in antique pens, [an] advertiser of an antique pen special[ty] consignment node [may] wish [to] target market individuals on the network who have purchased collectible pens in the past. A central coordinated master node may sell advertising to an advertiser for the log on message or email targeted participants and users.

Col. 6, l. 59 to Col. 7, l. 2. A person of ordinary skill in the art would understand from this passage, therefore, that the auction system could sell advertising space for use by a seller who

will auction goods. Since the auction system has established an account for the seller, the seller's account can be debited for the fees related to the advertising. This debiting of the seller's account can occur before the conclusion of the auction for the item advertised by the seller, in accordance with claim 29.

82. The '051 Patent specification also states that Agent searches may be conducted to search for prior purchasers of items. Col. 7, ll. 37-49. Thus, a prospective seller may search for participants who purchased items similar to those the seller wishes to auction in order, for example, to target market his items to be auctioned to such prior purchasers. The specification further provides that "a local consignment node [operator] may charge participants for Agent requests." Col. 7, ll. 56-57. A person of ordinary skill in the art would understand, therefore, that a participant's account which has been established by the system may also be debited or charged these fees related to Agent search requests. Such debiting can occur before the conclusion of an auction.

83. These examples are illustrative only. A person of ordinary skill in the art would understand, based on review of the '051 Patent specification in its entirety, that the auction system could debit the seller's account for any type of fees due to the auction system. And, in many cases, these fees can be debited to the account prior to the conclusion of an auction.

**B. Claims 6-8, 11 and 36-51 Are not Obvious From the Examiner's Combination of References**

84. For the same reasons as those set forth above, because the combination of the *Save the Earth*, *Computer Museum* and *From Army Knives to Gold Coins* articles and the Stein Patent fail to disclose or suggest each and every element of claims 1-5, this combination also fails to disclose or suggest each and every element of claims 6-8 and 11. Moreover, none of

these references discloses or suggests a computer-based auction system conducting an automated auction method wherein the auction program schedules multiple simultaneous Internet auctions of items, as required by claims 6-8 and 11, as the Examiner recognizes. The Examiner asserts, however, that the Fujisaki Patent is in the same field of endeavor as the claimed invention and discloses or suggests an auction program that schedules multiple simultaneous auctions of items via a telecommunication network, rather than via the Internet. The Examiner further asserts that it would have been obvious to a person of ordinary skill in the art to adapt the system disclosed in the Fujisaki Patent for use on the Internet with the auction system of the *Computer Museum* article for making simultaneous auctions available.

85. I disagree with the Examiner's contentions. The additional disclosure in the Fujisaki Patent does not cure the deficiencies in the combination of references. Once again, the system described in the Fujisaki Patent is not one in which multiple sellers can electronically submit to the auction system item data relating to items the sellers desire to list for auction via the system or to schedule, initiate and terminate auctions. Again, there is a single host entity which lists all of the items being auctioned.

86. The Fujisaki Patent also fails to disclose or suggest "an apparatus for conducting fully automated simultaneous Internet auctions," as required by claims 6-8 and 11. The auctions described in the described in the Fujisaki Patent are not conducted over the Internet, as the Examiner concedes. Nor are they fully automated. The auctions conducted in the Fujisaki Patent's system are not conducted on a real-time basis. Col. 6, ll. 26-29. Laser disks storing the auction data are distributed by a private delivery service to the dealer terminals before the start of the auction. Col. 4, ll. 46-65. Moreover, there is no "electronic mail module operationally connected to the data interface... providing an information link to the seller of the item for

auction,” as required by claims 6-8 and 11. Nor is there any worldwide web mapping module as required by these claims.

87. The Fujisaki Patent also fails to cure the deficiencies in the combination’s lack of any teaching or suggestion of “a process executing on the computer system for automatically establishing a seller’s account based on information received from a seller, the seller’s account being based at least on the seller’s identity and a financial instrument associated with the seller” or “a process executing on the computer system for automatically charging the seller’s account a fee amount corresponding to a result of the auction,” as required by claims 6-8 and 11. None of the references cited by the Examiner discloses or suggests either of these processes. Indeed, there is no need for a seller’s account in any of the systems described in the references since individual sellers cannot list items for auction via any of these systems.

88. The combination of the systems described in the *Save the Earth, Computer Museum* and *From Army Knives to Gold Coins* articles and the Stein and Fujisaki Patents also fails to disclose or suggest the combinations claimed in claims 36-39 and 43-50 for the same reasons as set forth above concerning claims 1, 6, 14, 24-25 and 34-35.

89. Moreover, I disagree with the Examiner’s contentions regarding claims 40-42 because, as I discussed above, an individual seller could not initiate an auction instance by transmitting item information to the auction system in the system described in the *From Army Knives to Gold Coins* article. The system operators Messrs. Blankley and Mintz kept all incoming messages private, reviewed all messages and decided whether to transfer them to the network. In addition, sellers were required to physically ship coins to be auctioned to Messrs. Blankley and Mintz who then checked the coins for authenticity and verified the accuracy of the

seller's asking price for the coin. All of these human activities were required before information about an item was transferred to the ACORN system.

90. Nor would it have been obvious for a person of ordinary skill in the art to have modified the auction system described in the *Save the Earth* article, in view of the Stein Patent, in view of the Fujisaki Patent, in view of the *Computer Museum* article and in view of the *From Army Knives to Gold Coins* article to implement a computer-based auction system for facilitating Internet-based auctions which was capable of executing a plurality of substantially simultaneous processes to "initiate auction instance[s] based on information received from [sellers]." None of the references cited by the Examiner discloses or suggests a system that initiates auction instances based on information received from individual sellers. They are all systems wherein a single host entity owns or possesses all of the items to be auctioned and the host entity is the only entity that transmits information to the computer system to schedule, initiate and terminate the auctions.

91. And, as set forth above, none of the cited references discloses or suggests a computer-based auction system wherein item information describing an item for auction is "received from a computer system independently operated by the seller" or wherein an auction instance for a seller's item "is initiated while the item remains outside of the [auction host entity's] possession" as required by claim 48.

92. Additionally, none of the cited references discloses or suggests a process executing on the computer-based auction system for "establish[ing] a seller's account based on information received from a seller, the seller's account being based at least on the seller's identity and a financial instrument associated with the seller" or for "charg[ing] the seller's

account a fee amount based on the initiated auction instance,” as required by claims 36-39 and 43-50.

93. Nor would it have been obvious to a person of ordinary skill in the art to modify any of those systems to arrive at a system which could conduct such processes. Since none of the systems in the cited references were ones wherein individual sellers could initiate auction instances, and the host entity was the only entity auctioning items, there was no need for seller’s accounts in those systems.

94. For the same reasons as discussed above with reference to claims 1-5, the cited combination of references similarly fails to disclose or suggest the combination of claim 51.

**C. Claim 9 is Not Obvious From the Examiner’s Combination of References**

95. The Examiner recognizes that none of the systems described in the *Save the Earth*, *Computer Museum*, or *From Army Knives to Gold Coins* articles, or the Stein Patent or Fujisaki Patent includes a “tracking code generator module... generating tracking codes to uniquely identify items for auction,” as required by claim 9. Instead, the Examiner relies upon the system described in the Nahan Patent for this disclosure.

96. I disagree that a person of ordinary skill in the art would have been motivated to combine the teachings of the Nahan Patent with the other references to arrive at the invention of claim 9. The Nahan Patent describes a multimedia presentation and marketing system in which customers physically present in an art dealer’s gallery can view images of works of art included in another art dealer’s inventory. A person of ordinary skill in the art would have regarded the teachings of the Nahan Patent as inapplicable to, and unhelpful in developing, an online auction system. Among other reasons, a person of ordinary skill seeking to develop an online auction

system would have been discouraged from looking to the Nahan Patent because the Nahan Patent denigrates auctions as being inadequate for Nahan's intended purpose. *See, e.g.*, Nahan Patent, Col. 4, ll. 23-26.

97. Moreover, the tracking inquiry relied upon by the Examiner, and described in the Nahan Patent, does not meet the "tracking code generator module" element of claim 9 because it does not "generate tracking codes to uniquely track items for auction." The tracking inquiry referenced by the Examiner relates to tracking that is conducted after a sale has been transacted. It relates to the tracking of an item while it is being shipped to the buying dealer. Col. 14, ll. 50-61. The tracking codes generated by the tracking code generator of claim 9 relate to codes used to uniquely identify items prior to their being auctioned.

98. Nor does the Nahan Patent cure the deficiencies of the combination of references with respect to the lack of disclosure or suggestion of "a process ... for automatically establishing a seller's account," or "a process... for automatically charging the seller's account a fee amount corresponding to a result of the auction," as required by claim 9. The Nahan Patent further fails to disclose or suggest "a worldwide web-to-database mapping module" as required by claim 9.

**D. Claim 52 is Not Obvious From the Combination of References Cited By the Examiner**

99. The Examiner recognizes that none of the systems described in the *Save the Earth*, *Computer Museum*, or *From Army Knives to Gold Coins* articles or the Stein, Fujisaki or Nahan Patents discloses or suggests an automated method, performed by a computer-based auction system, for conducting multiple simultaneous person-to-person auctions which includes the step of "displaying, in response to a search request from a buyer, the description of the item for auction in a presentation format via the world wide web, the display including advertisements



that generate revenue for the auction system” as required by claim 52. The Examiner relies upon the Lawlor Patent to allegedly satisfy that claim element.

100. I disagree that a person of ordinary skill in the art would have been motivated to combine the system described in the Lawlor Patent with the other references to implement the system of claim 52. The system described in the Lawlor Patent is not an online auction system at all. It relates to a distributed financial services system. It utilizes ATMs and telephone networks rather than the Internet. It has no relevance to a system wherein remote sellers can transmit descriptions of items they wish to list for auction to the auction system. The system described in the Lawlor Patent is not used to list and sell goods at all.

101. I also disagree that the Lawlor Patent satisfies the “display including advertisements” element of claim 52. Since the system described in the Lawlor Patent was not one for use over the Internet its display was not “in a presentation format via the world wide web” as required by claim 52. In fact, the format of the display described in the Lawlor Patent was quite primitive. As the patent describes, “[u]sers preferably receive and view messages through a four line (c.g., by 24 or 30 character) liquid crystal display (LCD).” Col. 8, ll. 31-33; Col. 12, ll. 32-54. “[T]he preferred embodiment terminal and associated user interface to some extent mimics the terminal/interface provided by standard ATMs. . .” Col. 8, ll. 46-48.

102. The Lawlor Patent also fails to satisfy this claim element because the advertising messages are not displayed “in response to a search request from a buyer” as required by claim 52, but rather, “can be sent electronically to each home banking user each time he ‘signs on’ his terminal and/or distributed in other ways such as mass mailings.” Col. 14, ll. 13-15.

103. Moreover, the combination of references relied upon by the Examiner to reject claim 52 fails to disclose or suggest each and every element of claim 52 for several additional

reasons. None of the cited references discloses or suggests “an automated method, performed by a computer-based auction system, for conducting multiple simultaneous person-to-person auctions” which includes the step of “receiving via the data packet network from the seller a description of an item for auction” as required by the claim. The systems described in the Stein, Nahan and Lawlor Patents are not even online auction systems. The systems described in the other references are not “person-to-person” auction systems wherein sellers can transmit via the Internet for receipt by the auction system item descriptions for items they wish to list for auction via the system. Nor do any of the cited references disclose or suggest a computer-based auction system that performs a method which includes the step of “automatically auctioning the item for auction posted by the seller, the auction being conducted while the item for auction remains outside of the first entity’s [the system operator] possession” as required by claim 52. In each of the cited references that describes an auction system, the entity that hosted and operated the auction system had possession of the items being auctioned.

104. Furthermore, none of the cited references discloses or suggests a computer-based auction system which performs a method which includes the steps of “establishing a seller’s account in the computer-based auction system wherein the seller, via an independently operated seller’s computer system, specifies a financial instrument against which a seller’s commission may be automatically charged by the computer-based auction system” or “automatically charging the seller via the seller’s account the calculated seller’s commission,” as required by claim 52. Indeed, as set forth above, none of the systems described in the references had a need for seller’s accounts since the auction hosts possessed all of the items offered for auction via the systems.

105. I note that the Examiner has requested that MercExchange provide support from the specification for the element of claim 52 reciting “displaying, in response to a search request from a buyer, the description of the item for auction in a presentation format via the world wide web, the display including advertisements that generate revenue for the auction system.”

106. A person of ordinary skill in the art, from a review of the specification, would understand that the inventor was in possession of the invention of claim 52 including the above-recited element at the time the specification was filed.

107. For example, the specification describes that that system operator may sell virtual advertising space to reach target market participants. The specification describes an instance where a prospective seller of an antique pen can purchase advertising space to target market his antique pen to participants who have purchased antique pens in the past. Col. 6, l. 59 to Col. 7, l. 5. A person of ordinary skill in the art would understand from this passage that the seller’s antique pen advertisement could be displayed with search results to a prospective buyer who was conducting a search of all antique pens being auctioned by the auction system.

108. There are a number of other passages in the patent specification which provide written description support for this claim element to a person of ordinary skill in the art. For example, the specification provides that “[i]t is understood that the welcome message is viewed by the consignment node [operator] as virtual advertising space that may be sold by the consignment node [operator]...” Col. 9, ll. 14-18.

109. The specification further provides that “[a] participant with a supported interface program may select the auction 108, market 110 or agent handler 112 sections of the consignment node. If a participant selects auction 108 the participant may be presented with a menu of auction selections such as auctions in session, future auction times, dates, locations and

topics, and auction preview.... It is understood that these displays represent a virtual advertising opportunity for the consignment node [operator] and the advertising space may be sold..." Col. 9, ll. 37-51. This passage provides explicit support for the element of claim 52 at issue since it describes a search request of a participant (*e.g.*, a search of auctions in session or future auctions) and a display of an advertisement in response to the participant's search request.

## **V. CONCLUSION**

110. In summary, for all of the foregoing reasons, it is my opinion that none of the references cited by the Examiner in the Office Action dated January 31, 2005, when considered alone or in combination with the other cited references, renders any of the claims of the '051 Patent obvious.

The undersigned declares further that all statements made herein of his own knowledge are true and all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: March 29, 2005

By: Alfred C. Weaver  
Alfred C. Weaver, Ph.D.



## *Curriculum Vitae*

*Alfred C. Weaver*

### **1. EDUCATION, EMPLOYMENT, AND PROFESSIONAL ACTIVITIES**

#### **1.1 Education:**

Ph. D. (computer science)	University of Illinois, 1976
M. S. (computer science)	University of Illinois, 1973
B. S. (engineering science)	University of Tennessee, 1971

#### **1.2 Professional Employment History**

University of Virginia, Charlottesville, Virginia

Lucian Carr III Professor of Engineering and Applied Science, 2002--  
Professor of Computer Science, 1992--  
Associate Professor of Computer Science, 1983-92  
Chairman, Department of Computer Science, 1984-85  
Assistant Professor of Computer Science, 1977-1983

Virginia's Center for Innovative Technology, Herndon, VA  
Program Consultant, 1996-97 (sabbatical)

NASA--Johnson Space Center, Houston, Texas  
Computer scientist, August 1986--June 1987 (sabbatical)

Department of Computer Engineering, Lund University, Lund, Sweden  
Visiting Associate Research Professor of Computer Science, May-June 1983

Technical University of Denmark, Lyngby, Denmark  
Visiting Instructor, summer 1975

Department of Computer Science, University of Illinois, Urbana, Illinois  
Graduate Teaching Assistant, 1971-1975

IBM Graduate Fellow in Computer Science, 1975-1976  
Visiting Assistant Professor of Computer Science, 1976-1977

Tennessee Valley Authority, Knoxville, Tennessee  
Engineer, Division of Research and Development, 1970-1971

Department of Computer Science, University of Tennessee, Knoxville, Tennessee  
Undergraduate Teaching Assistant, 1969-1970

#### **1.3 Consultant Positions**

Venable LLP, 2004—  
Expert witness (patent infringement)  
Swidler Berlin, 2003—  
Expert witness (patent infringement)

Hunton & Williams, 2001—  
 Expert witness (patent infringement)

LeClair Ryan, Inc., 2000  
 Expert witness (data theft)

Kirkland & Ellis, 1999  
 Expert witness (patent infringement)

Sitara Networks, Inc. 1997-98  
 Design of high-speed Internet access protocols

Infocus Communications, Inc. 1996-97  
 Business plan development for web hosting services

Pennie and Edmonds, 1996  
 Expert witness (patent infringement)

MITRE Corporation, 1995  
 Design review of Pentagon ATM Communications Systems

Weingarten, Shurgin, Gagnebin & Hayes, 1993  
 Expert witness (patent infringement)

Institute for Defense Analyses, 1990-95  
 Design of real-time distributed computing systems

Honeywell, Inc., Space Systems Division, 1990-91  
 Design of high-performance network interface unit

Honeywell, Inc., Sensor and Systems Development Division, 1988-92  
 Design of networked industrial automation systems

E-Systems, 1990-91  
 Design of very high-speed computer networks

Federal Emergency Management Agency, 1990  
 Computer network design for FEMA

Latham and Watkins, Washington, DC, 1988  
 Expert witness (contract dispute), FAA Advanced Automation System

Lockheed Engineering and Management Company, Houston, Texas, 1986-89  
 Local area network design for the NASA space station

Johnson Controls, Inc., Milwaukee, Wisconsin, 1986-87  
 Local area networks for building automation

Sperry Marine Inc., Charlottesville, Virginia, 1986--  
 Shipboard local area network design

Johnson & Johnson, New Brunswick, New Jersey, 1983-84  
 Industrial controls and computer networks

Dallas/Fort Worth Airport, 1982-83  
 Microprocessor-based environmental controls

Reliance Oil Company, Charlottesville, Virginia, 1981-83  
 Microcomputer-based financial management systems

Salley-Weissinger and Co., Charlottesville, Virginia, 1980-81  
 Microcomputer-based financial management/analysis systems

General Electric Company, Charlottesville, Virginia, 1980-82  
 Design of numerical and programmable controls

Struthers-Dunn, Inc., Bettendorf, Iowa, 1973-84  
 Microprocessor-based industrial process controller design

#### **1.4 Professional Activities**

##### **1.4.1 Professional Societies and Activities**

Phi Eta Sigma  
 Tau Beta Pi  
 Phi Kappa Phi  
 Sigma Xi  
 Association for Computing Machinery, 1974 --

Institute of Electrical and Electronics Engineers (IEEE), 1978 --  
 IEEE Industrial Electronics Society Administrative Committee, 1982 --  
 Associate Editor, IEEE *Transactions on Industrial Electronics*, 1995 --  
 Area editor (networks and electronic commerce), IEEE *Computer*, 1999 --  
 Vice-President, IEEE Industrial Electronics Society (IES), 1992-93  
 President, IEEE Industrial Electronics Society (IES), 1994-95  
 Chairman, IEEE IES Technical Committee on Factory Communication  
 U.S. Army Advisory Committee for Basic Research  
 Chairman, Intel 432 University Users Group  
 ACM (Association for Computing Machinery) National Lecturer  
 Member, CSNet Executive Committee  
 General Chairman, IEEE IES Workshop on Factory Communications, March 1987  
 Tutorial Chairman, IEEE IES IECON, 1983-1988  
 Program Committee, IEEE Workshop on Languages for Factory Automation, August 1987  
 Technical Program Committee, IEEE Workshop on Local Area Networks, October 1987  
 Technical Program Committee, 13th Local Computer Networks Conference, October 1988  
 Technical Program Committee, 14th Local Computer Networks Conference, October 1989  
 Technical Program Committee, 15th Local Computer Networks Conference, October 1990  
 Organizing Committee, 16th Local Computer Networks Conference, October 1991  
 Organizing Committee, 17th Local Computer Networks Conference, September 1992  
 Organizing Committee, 18th Local Computer Networks Conference, September 1993  
 Organizing Committee, 19th Local Computer Networks Conference, October 1994  
 Technical Program Chairman, IEEE IECON'89, Philadelphia, Pennsylvania, November 1989  
 Technical Program Chairman, IEEE IECON'90, Monterey, California, November 1990  
 Technical Program Co-Chairman, IEEE IECON'91, Kobe, Japan, November 1991  
 Technical Tours Chairman, IEEE IECON'92, San Diego, California, November 1992  
 Technical Tutorials Chairman, IEEE IECON'93, Maui, Hawaii, November 1993  
 Advisor, IEEE IECON'94, Bologna, Italy, September 1994.  
 Tutorials Chairman, IEEE IECON'95, Orlando, Florida, November 1995.  
 Technical Program Committee, IEEE IECON'96, Taipei, Taiwan  
 Treasurer, IEEE IECON'97, New Orleans, LA, November 1997  
 Technical Program Committee, Submissions Chairman for North and South America, IECON'98, Hamburg, Germany,  
 November 1998  
 Technical Program Committee, International Workshop on Advanced Communications and Applications for High  
 Speed Networks, March 1992  
 Vice-Chairman, Workshop on Emerging Technologies and Factory Automation, August 1992  
 Advisory Committee, Industrial Electronics Symposium, June 1993  
 Administration Chairman, ETFA'93 Emerging Technologies and Factory Automation, Cairns, Queensland, Australia,  
 September 1993  
 Vice-Chairman, ETFA'94 Emerging Technologies and Faculty Automation, Tokyo, Japan, November 1994.  
 Technical Program Chairman, ETFA'95: Emerging Technologies and Factory Automation, Paris, France, October  
 1995.  
 Organizing Committee, IWACA'92: International Workshop on Advanced Communications and Applications of High  
 Speed Networks, Munich, Germany, March 1992.  
 Organizing Committee, IWACA'94: International Workshop on High Speed Teleservices and Applications,  
 Heidelberg, Germany, September 1994.  
 Advisor, ISIE'94: International Symposium on Industrial Electronics, Santiago, Chile, May 1994.  
 Advisor, ISIE'95: International Symposium on Industrial Electronics, Athens, Greece, July 1995.  
 Advisor, ICIT'94: International Conference on Industrial Technology, Guangzhou, China.  
 Steering Committee, ACCE: AFCEA Computing Conference and Exposition, Arlington, Virginia, February 1995.  
 Program Chairman, IEEE International Workshop on Factory Communications Systems, Leysin, Switzerland, October  
 1995.  
 Technical Program Committee, IEEE International Workshop on Emerging Technologies and Factory  
 Communications, Paris, France, October 1995.  
 Co-Chairman, IEEE International Workshop on Factory Communications, Barcelona, Spain, September 1997.



Treasurer, IEEE IECON'97 International Conference on Industrial Electronics, Control, and Instrumentation, New Orleans, LA, November 10-14, 1997.  
 Program Chairman, IEEE IECON'98 International Conference on Industrial Electronics, Control, and Instrumentation, Aachen, Germany, November 1998.  
 Program Committee, IEEE International Conference on Industrial Electronics ICIE'98, People's Republic of China, 1998.  
 Program Co-Chair, Workshop on Factory Communications Systems WFCS'99, May 1999.  
 Steering Committee, 7th International Conference on Emerging Technologies and Factory Automation, October 18-22, 1999, Barcelona, Spain.  
 Technical Program Co-Chair, IEEE IECON'99 Industrial Electronics, Control, and Instrumentation, December 1999.  
 Co-organizer, A Totally Networked Industry Environment, special theme of IECON'99, December 1999.  
 Publicity Committee, IECON2000, Nagoya, Japan, October 2000.  
 Committee Chair, IEEE IES Industrial Information Technology Committee, March 2001 –  
 Track Chair for Industrial Information Technology, IECON'03, Roanoke, Virginia, Nov. 2003  
 Organizer and Technical Program Chair, IEEE International Conference on Industrial Informatics (INDIN'03), Banff, Alberta, Canada, August 21-24, 2003  
 Organizer and Technical Program Co-Chair, IEEE International Conference on Industrial Informatics (INDIN'04), Berlin, Germany, June 24-26, 2004.  
 Industrial Electronics Society liaison to Workshop on Factory Communications, Vienna, Austria, September 2004.  
 Organizer and Technical Program Co-Chair, IEEE International Conference on Industrial Informatics (INDIN'05), Sydney, Australia, 2005.  
 Organizer and General Chair, IEEE International Conference on Industrial Informatics (INDIN'06), Washington, D.C., 2006.

#### **1.4.2 Honors**

Fellow of the IEEE, January 1996--

Keynote speaker, "Industrial Informatics," IEEE Industrial Electronics Society Annual Conference (IECON'05), Hong Kong, December 2005.

Keynote Speaker, "Industrial Informatics," IEEE Industrial Electronics Society Annual Conference (IECON'03), Roanoke, VA, November 2003.

Distinguished Lecturer, IEEE Industrial Electronics Society, 1999--

Keynote Speaker, "Electronic Commerce on the Internet," IEEE Industrial Electronics Annual Conference IECON'96, Kauai, Hawaii, December 1996.

American Men and Women of Science, 1988--

#### **1.4.3 Reviewer for Professional Journals and Research Proposals**

IEEE *Computer Magazine* editorial board  
 Area Editor (networks and electronic commerce), IEEE *Computer*  
 Assoc. Editor, *World Wide Web Journal*  
 Assoc. Editor, *IEEE Transactions on Industrial Electronics*  
*Journal of Internetworking Research and Experience*  
 IEEE *Computer*  
 IEEE *Spectrum*  
*IEEE Transactions on Industrial and Process Control*  
 IEEE *Micro*  
 IEEE Robotics and Automation  
 ACM *Computing Reviews*  
 SOFTWARE - Practice & Experience  
 National Science Foundation

U. S. Army Research Office  
Office of Naval Research  
Virginia's Center for Innovative Technology  
Iranian Journal of Electrical and Computer Engineering

## 1.5 Patents and Copyrights:

### Patents:

*Process Control System That Controls Its Outputs According to the Results of Successive Analysis of the Vertical Columns of a Hypothetical Ladder Diagram*, filed July 25, 1977, U. S. Patent Office, granted October 1980, number 4,217,658.

### Copyrights:

*A Graphically-Programmed, Microprocessor-Based Industrial Controller*, published April 15, 1977, copyright registration no. A868730.

## 2. PUBLICATIONS AND LECTURES

### 2.1 Publications

#### 2.1.1 Books and Book Chapters

Dwyer III, S. J., Weaver, A. C., and Hughes, Kristen, "Health Insurance Portability and Accountability Act," chapter two of Security Issues in the Digital Medical Enterprise, Society for Computer Applications in Radiology, May 2004, pp. 9-18.

Weaver, A. C., "Xpress Transport Protocol," High Performance Cluster Computing, Prentice Hall, 1999, pp. 301-316.

Weaver, A. C., "Factory Communications" section editor, chapters 16-20 of CRC Handbook of Industrial Electronics, June 1997, pp. 385-438, ISBN 0-8493-8343-9.

Weaver, A. C., "Ethernet and IEEE 802.3 Contention Bus", CRC Handbook of Industrial Electronics, June 1997, pp. 394-396.

Weaver, A. C., "IEEE 802.4 Token Bus," CRC Handbook of Industrial Electronics, June 1997, pp. 400-403.

Strayer, W.T., Dempsey, B.J., and Weaver, A. C., XTP: the Xpress Transport Protocol, Japanese language edition, Addison Wesley, 1996, ISBN 4-8101-8071-9.

Sublett, J.W., Dempsey, B.J., and Weaver, A. C., "Design and Implementation of a Digital Teleultrasound System for Real-Time Remote Diagnosis," Computer-Based Medical Systems, IEEE Computer Society Press, 1995, pp. 292-298.

Dempsey, Bert J., Lucas, Matthew T., and Weaver, A. C., "Design and Implementation of a High-Quality Video Demonstration System using XTP Reliable Multicast," Multimedia: Advanced Teleservices and High-Speed Communication Architectures, Ralf Steinmetz (Ed.), Springer-Verlag, 1994, pp. 376-387.

Weaver, A. C., "XTP: A New Communications Protocol for Factory Automation," in Modern Tools for Manufacturing Systems, Richard Zurawski, editor, Elsevier, 1993, pp. 439-450.

Strayer, W.T., Dempsey, B.J., and Weaver, A. C., XTP: The Xpress Transfer Protocol, Addison-Wesley, 1992, ISBN 0-201-56351-7, 272 pages.

Weaver, A. C., "XTP for the NASA Space Station," in Protocols for High Speed Networks, Harry Rudin and Robin Williamson, editors, North Holland, 1989, pp. 35-42.

Weaver, A. C., "Intel 8085 Microprocessor Experiments," Lund University, Lund, Sweden, 1985.

### 2.1.2 Refereed Journal Publications

Weaver, A.C., Dwyer III, S.J., Bassignani, M.J., Gay S., Moynihan S., "Impact of Image Encryption on Radiology Department Workflow," *Journal of Digital Imaging* (submitted).

Bassignani, M.J., Dwyer III, S.J., Ciambotti, J.M., Olazagasti, J.M., Moran, R., Moynihan, S., Weaver, A.C., Snyder, A.M., "Review of Technology: Planning for the Development of Telesonography," *Journal of Digital Imaging* 17(1), 18-27, 2004.

Gay, S.B., Snyder, A.M., Weaver, A.C., Bassignani, M.J., Dwyer III, S.J., "Evaluation of HIPAA Security Requirements on Encryption for Radiology Throughput Rates," SCAR 21<sup>st</sup> Meeting, May 20-23, 2004, Vancouver, British Columbia, 2004.

Weaver, A.C., "Industrial Informatics Review," *IEEE Transactions on Industrial Informatics*, vol. 1, no. 1, January 2005.

Weaver, Alfred C., "Industrial Informatics," Special Section on Industrial Informatics, *IEEE Transactions on Industrial Electronics*, vol. 50, no. 3, pp. 402-403, June 2003.

Weaver, Alfred C., and Condry, Michael W., "Distributing Internet Services to the Network's Edge," *Transactions on Industrial Electronics*, vol. 50, no. 3, pp. 404-411, June 2003.

Weaver, Alfred C., Vetter, R. J., Whinston, A. B. and Swigger, K., "The Future of E-Commerce," *Computer*, vol. 33, no. 10, October 2000.

DeAngelis, Gia A., Dempsey, Bert J., Berr, Stuart, Fajardo, Laurie L., Sublett, John W., Hillman, Bruce J., Weaver, Alfred C., Berbaum, Kevin, and Dwyer, Samuel J., "Diagnostic Efficacy of Compressed Digitized Real-time Sonography of Uterine Fibroids," *Academic Radiology*, Volume 4, 1997, pp. 83-89.

Dempsey, B.J., Liebeherr, J., and Weaver, A. C., "On Retransmission-Based Error Control for Continuous Media Traffic in Packet-Switching Networks", *Computer Networks and ISDN Systems*, Vol. 28, No. 5, March 1996, pp. 719-736.

DeAngelis, Gia A., Dempsey, Bert J., Berr, Stuart, Fajardo, Laurie L., Sublett, John W., Hillman, Bruce J., Weaver, Alfred C., Berbaum, Kevin, and Dwyer, Samuel J., "Digitized Real-Time Ultrasound: Signal Compression Experiment," *Radiology*, Vol. 197(P), November 1995, p. 336.

Sublett, J.W., Dempsey, B.J., and Weaver, A. C., "Design and Implementation of a Digital Teleultrasound System for Real-Time Remote Diagnosis," *Computer-Based Medical Systems*, IEEE Computer Society Press, 1995, pp. 292-298.

Weaver, A. C., "The Xpress Transfer Protocol," *Journal of Computer Communications*, Vol. 17, No. 1, January 1994.

Weaver, A. C., and Cerf, V., "Viewpoint: Computer Networks," *IEEE Computer*, September 1991 (invited).

Howes, N. R., and Weaver, A. C., "Performance Bounds on OSI Protocols When Implemented in Ada," *Transactions on Software Engineering*, December 1989.

Strayer, W. T., and Weaver, A. C., "Performance Measurement of Data Transfer Services in MAP," *IEEE Networks*, May 1988.

- Peden, J. H., and Weaver, A. C., "Are Priorities Useful on an IEEE 802.5 Token Ring?," *IEEE Transactions on Industrial Electronics*, Vol. IE-35, No. 3, August 1988, pp. 361-365.
- Gorur, R. M., and Weaver, A. C., "Setting Target\_Rotation\_Times in an IEEE 802.4 Network," *IEEE Transactions on Industrial Electronics*, Vol. IE-35, No. 3, August 1988, pp. 366-371.
- Weaver, A. C., and Summers, C.F., "The IEEE 802.4 TokenBus -- A Performance Bound on GM MAP," *IEEE Transactions on Industrial Electronics*, Vol. IE-35, No. 1, February 1988.
- Weaver, A. C., and Colvin, M. A., "A Real-Time Messaging System for Token Ring Networks," *SOFTWARE - Practice and Experience*, Vol. 17(12), December 1987, pp. 885-897.
- Colvin, M. A., and Weaver, A. C., "Performance of Single Access Classes on the IEEE Token Bus," *IEEE Transactions on Communications*, Vol. COM-34, Number 12, December 1986, pp. 1253-1256.
- Weaver, A. C., "A Highly Reliable LAN Protocol," *IEEE Journal on Selected Areas in Communications*, Vol. SAC-4, Number 7, October 1986, pp. 1181-1183.
- Weaver, A. C., and Butler, D. W., "A Fault-Tolerant Network Protocol for Real-Time Communications," *IEEE Transactions on Industrial Electronics*, Vol. IE-33, No. 3, August 1986, pp. 207-211.
- White, C. C., Wilson, E. C., and Weaver, A. C., "Decision Aid Development for Use in Ambulatory Health Care Settings," *Operations Research*, Vol. 30, No. 3, May-June 1982, pp. 446-463.
- Faiman, M., Weaver, A. C., and Catlin, R. W., "MUMS--A Reconfigurable Microprocessor Architecture," *IEEE Computer*, Vol. 10, No. 1, January 1977, pp. 11-17.

### 2.1.3 Refereed Proceedings Publications

- Weaver, Alfred C., "A Software Laboratory for Electronic Commerce," *Frontiers in Education*, Savannah, Georgia, October 2004.
- Weaver, Alfred C., "Enforcing Distributed Data Security via Web Services," *IEEE Workshop on Factory Communications*, Vienna, Austria, September 2004.
- Hu, Junzhe, and Weaver, Alfred C., "Dynamic, Context-Aware Access Control for Distributed Healthcare Applications," *Workshop on Pervasive Security, Privacy, and Trust (PSPT'04)*, Boston, MA, August 2004.
- Weaver, Alfred C., "A Programming Laboratory for Electronic Commerce," *Frontiers in Education*, Savannah, Georgia, October 2004.
- Weaver, Alfred C., "Electronic Commerce Software Laboratory," *ACM SIGCSE*, Norfolk, VA, March 2004.
- Weaver, A.C., Dwyer III, S.J., Snyder, A.M., Van Dyke, J., Hu, James, Chen, Xiaohui, Mulholland, Timothy, Marshall, Andrew, "Federated, Secure Trust Networks for Distributed Healthcare IT Services," *IEEE International Conference on Industrial Informatics*, Banff, Alberta, Canada, August 21-24, 2003.
- Snyder, A.M., and Weaver, A.C., "The e-Logistics of Securing Distributed Medical Data," *IEEE International Conference on Industrial Informatics*, Banff, Alberta, Canada, August 21-24, 2003.
- Gay, Spencer B., Dwyer III, Samuel J., and Weaver, A.C., "Modeling of Workflow in Diagnostic Radiology Departments," *20<sup>th</sup> Symposium for Computer Applications in Radiology*, Boston, MA, June 7-10, 2003.
- Bassignani, Matthew J., Dwyer III, Samuel J., and Weaver, A.C., "Planning for the Development of Telsonography," *20<sup>th</sup> Symposium for Computer Applications in Radiology*, Boston, MA, June 7-10, 2003.

- Weaver, A.C., and Condry, M. W., "Distributed Computing at the Internet's Edge," IECON'02, Seville, Spain, November 2002.
- Weaver, A.C., and Talbert, Scott, "Real-Time Event Channel Performance on a Submarine Communications Network," IECON'02, Seville, Spain, November 2002.
- Weaver, A. C., "Factory Monitoring and Control Using the Internet," IECON'01, Denver, CO, December 2001.
- Weaver, A. C., "Survey of Industrial Information Technology," IECON'01, Denver, CO, December 2001.
- Weaver, A. C., "Internet-based Factory Monitoring," IECON'01, Denver, CO, December 2001.
- Weaver, A. C., Van Dyke, James, "Multicast Distribution and Control of Streaming Multimedia," IECON'01, Denver, CO, December 2001.
- Weaver, A. C., Lu, Pinchao, "Intelligent Internet Search Agents," IWATIC'2001, Las Vegas, NV, July 2001.
- Weaver, A. C., "Monitoring and Control Using the Internet and Java," IECON'99, December 1999.
- Lucas, Matthew T., Dempsey, Bert J., and Weaver, Alfred C., "MESH-R: Large-Scale, Reliable Multicast Transport," IEEE International Conference on Communication (ICC99), Vancouver, BC, June 1999.
- Weaver, A. C., "Network Communications for Cluster Computing," Local Computer Networks '98, October 1998.
- Weaver, A. C., "Profiting from the Internet and the World Wide Web," IECON'98, Aachen, Germany, September 1998.
- Lucas, Matthew T., Wrege, Dallas E., Dempsey, Bert J., and Weaver, Alfred C., "Statistical Characterization of Wide-Area IP Traffic," Sixth International Conference on Computer Communications and Networks (IC3N'97), Las Vegas, NV, September 1997.
- Lucas, Matthew T., Dempsey, Bert J., Wrege, Dallas E., and Weaver, Alfred C., "(M,P,S) -- An Efficient Self-Similar Traffic Model for Wide-Area Network Simulation," IEEE Globecom '97, Phoenix, AZ, November 1997.
- Lucas, Matthew T., Dempsey, Bert J., and Weaver, Alfred C., "MESH: Distributed Error Recovery for Multimedia Streams in Wide-Area Multicast Networks," IEEE International Conference on Communications (ICC'97), Montreal, Canada, June 1997, pp. 1127-1133.
- Weaver, A. C., "The Internet and the World Wide Web," IECON'97, New Orleans, LA, November 1997.
- Weaver, A. C., "Xpress Transport Protocol Version 4," IEEE International Workshop on Factory Communications Systems, Leysin, Switzerland, October 1995.
- Bert J. Dempsey, Matthew T. Lucas, and Alfred C. Weaver, "Design and Implementation of a High Quality Video Distribution System Using XTP Reliable Multicast," IWACA'94, Heidelberg, Germany, September 1994.
- Dempsey, Bert J., Liebeherr, Jorg, and Weaver, Alfred C., "On Retransmission-Based Error Control for Continuous Media Traffic in Packet-Switching Networks," SIGCOMM'94, London, England, August 30-September 2, 1994.
- Dempsey, Bert J., Lucas, Matthew T., and Weaver, Alfred C., "An Empirical Study of Multimedia Distribution over a Campus-Wide Network," 19th Local Computer Networks Conference, Minneapolis, MN, October 2-5, 1994, pp. 376-387.

- Dempsey, Bert J., Lucas, Matthew T., and Weaver, Alfred C., "An Empirical Study of Packet Voice Distribution over a Campus-Wide Network," IWACA'94, Heidelberg, Germany, September 26-28, 1994.
- Weaver, A. C., "XTP: A Communications Protocol for Real-Time Distributed Systems," IECON'93, Maui, Hawaii, November 1993.
- Weaver, A. C., "Teleradiology, Teleconferencing, and Teleconsultation," High Performance Communication Subsystems, Williamsburg, VA, September 1-3, 1993.
- Street, F., and Weaver, A. C., "Video Mail for Networked Personal Computers," High Performance Communication Subsystems, Williamsburg, VA, September 1-3, 1993.
- Dempsey, B., Liebeherr, J., and Weaver, A. C., "A Delay-Sensitive Error Control Scheme for Continuous Media Communications," High Performance Communication Subsystems, Williamsburg, VA, September 1-3, 1993.
- Michel, J., Waterman, A., and Weaver, A., "Performance Evaluation of an Off-Host Communications Architecture," High Performance Communication Subsystems, Williamsburg, VA, September 1-3, 1993.
- Dempsey, B., Liebeherr, J., and Weaver, A. C., "A New Error Control Scheme for Packetized Voice over High Speed Local Area Networks," 18th Local Computer Networks Conference, Minneapolis, MN, September 19-22, 1993, pp. 91-100.
- Street, F., and Weaver, A. C., "A Video Mail System for Networked Personal Computers," 18th Local Computer Networks Conference, Minneapolis, MN, September 19-22, 1993.
- Michel, J., Waterman, A., and Weaver, A. C., "Performance Evaluation of an Off-Host Communications System," 18th Local Computer Networks Conference, Minneapolis, MN, September 19-22, 1993.
- Weaver, A. C., and McNabb, James F., "Digital Voice Distribution Using XTP and FDDI," 17th Local Computer Networks Conference, Minneapolis, MN, September 13-16, 1992.
- Weaver, A. C., and Simoncic, R., "A High Speed Communications Protocol for Distributed Applications," IEEE International Symposium on Industrial Electronics, Budapest, Hungary, June 1993.
- Weaver, A. C., "Computer Communications for Factory Automation," IEEE International Symposium on Industrial Electronics, Budapest, Hungary, June 1993.
- Weaver, A. C., "XTP: A New Transport Protocol for Factory Automation," IEEE International Workshop on Emerging Technologies and Factory Automation, Cairns, Australia, August 17-19, 1992.
- Weaver, A. C., "High Speed Communications for Distributed Applications," IEEE International Workshop on Emerging Technologies and Factory Automation, Melbourne, Australia, August 11-14, 1992.
- Weaver, A. C., "The Xpress Transfer Protocol: A Fast Transport Protocol for High Speed Networks," International Workshop on Advanced Communications and Applications for High Speed Networks, Munich, Germany, March 16-19, 1992.
- Strayer, W.T., and Weaver, A. C., "Is XTP Suitable for Real-Time Distributed Systems?," International Workshop on Advanced Communications and Applications for High Speed Networks, Munich, Germany, March 16-19, 1992.
- Dempsey, B.J., and Weaver, A. C., "Controlled Message Loss under Connection-Oriented Service," International Workshop on Advanced Communications and Applications for High Speed Networks, Munich, Germany, March 16-19, 1992.

- Dempsey, B.J., Strayer, W. T., and Weaver, A. C., "Adaptive Error Control for Multimedia Data Transfers," International Workshop on Advanced Communications and Applications for High Speed Networks, Munich, Germany, March 16-19, 1992.
- Weaver, A. C., "The Xpress Transfer Protocol," TriComm'92, North Carolina State University, Raleigh, NC, February 1992.
- Weaver, A. C., "Making Transport Protocols Fast," 16th Local Computer Networks Conference, Minneapolis, MN, October 13-17, 1991.
- Harvey, J. D., and Weaver, A. C., "Experience with the Abstract Syntax Notation One and the Basic Encoding Rules," 16th Local Computer Networks Conference, Minneapolis, MN, October 13-17, 1991.
- Simoncic, R., Weaver, A. C., and Colvin, M. A., "Experience with the Xpress Transfer Protocol," 15th Local Computer Networks Conference, Minneapolis, MN, October 1-3, 1990.
- Dempsey, B.J., Fenton, J.C., and Weaver, A. C., "The Multidriver: A Reliable Multicast Service for the Xpress Transfer Protocol," 15th Local Computer Networks Conference, Minneapolis, MN, October 1-3, 1990.
- Weaver, A. C., and McNabb, James F., "A Real-Time Monitor for Token Ring Networks," MILCOM'89, Boston, MA, October 16-18, 1989.
- Weaver, A. C., and Simoncic, R., "Communications for the NASA Space Station," 14th Local Computer Networks Conference, Minneapolis, MN, October 10-12, 1989.
- Strayer, W. T., and Weaver, A. C., "An Argument for Judicious Use of Error Correction Mechanisms in LANs," 14th Local Computer Networks Conference, Minneapolis, MN, October 10-12, 1989.
- Weaver, A. C., "Thoughts on Fast Protocols," 14th Local Computer Networks Conference, Minneapolis, MN, October 10-12, 1989.
- Simoncic, R., Weaver, A. C., Cain, B. G., and Colvin, M. A., "SEANET: A Real-Time Communications Network for Ships," International Conference on Mini and Microcomputers, Miami Beach, FL, December 14-16, 1988.
- Strayer, W. T., Mitchell, M., and Weaver, A. C., "ISO Protocol Performance Measurements," International Conference on Mini and Microcomputers, Miami Beach, FL, December 14-16, 1988.
- Minnich, D. W., and Weaver, A. C., "Performance Analysis of the SAE HSRB Token Ring Network," International Conference on Mini and Microcomputers, Miami Beach, FL, December 14-16, 1988.
- Simoncic, R., Weaver, A. C., Cain, B. G., and Colvin, M. A., "SHIPNET: A Real-Time Local Area Network for Ships," 13th Annual Conference on Local Computer Networks, Minneapolis, MN, October 10-12, 1988.
- Peden, Jeffery H., and Weaver, A. C., "The Utilization of Priorities on Token Ring Networks," 13th Annual Conference on Local Computer Networks, Minneapolis, MN, October 10-12, 1988.
- Strayer, W. T., and Weaver, A. C., "Performance Measurements of Motorola's Implementation of MAP," 13th Annual Conference on Local Computer Networks, Minneapolis, MN, October 10-12, 1988.
- Howes, N. R., and Weaver, A. C., "On Implementing the OSI Model in Ada via Tasking," Washington Ada Conference, Washington, D.C., June 1988.
- Peden, J. H., and Weaver, A. C., "Performance of Priorities on an 802.5 Token Ring," ACM SIGCOMM, Stoweflake, Vermont, August 1987.

- Weaver, A. C., "An Experimental Real-Time Messaging System," IEEE/ISA Joint Conference, Houston, Texas, March 1987.
- Gorur, R. Mangala, and Weaver, A. C., "Setting Target Rotation Times for the IEEE 802.4 Token Bus," IEEE Workshop on Factory Communications, National Bureau of Standards, Gaithersburg, Maryland, March 1987.
- Peden, Jeffery H., and Weaver, A. C., "Are Priorities Necessary on an IEEE 802.5 Token Ring?," IEEE Workshop on Factory Communications, National Bureau of Standards, Gaithersburg, Maryland, March 1987.
- Weaver, A. C., "An Evaluation of Priorities on the IEEE 802.5 Token Ring," International Symposium on Mini and Microcomputers, Austin, Texas, November 10-12, 1986.
- Bennett, Ross, and Weaver, A. C., "Shipboard Data Network -- A Proposal," Proceedings of the National Marine Electronics Association, Braintree, Massachusetts, October 14, 1986.
- Summers, C. F., and Weaver, A. C., "Performance of IEEE 802.4 -- the Basis of MAP," Proceedings of the IEEE Industrial Electronics Society IECON '86, Milwaukee, Wisconsin, October 1986.
- Weaver, A. C., "A Fault-Tolerant Protocol for Local Area Networks," Proceedings of the IEEE Industrial Electronics Society IECON '84, Tokyo, Japan, October 1984.
- Weaver, A. C., "A High-Performance Fault-Tolerant Local Area Network," Proceedings of the IEEE International Conference on Computers and Applications, Beijing, China, June 1984.
- Weaver, A. C., Albrecht, D. C., Colvin, M. A., and Smith, M. J., "High-Performance Real-Time Communication Network Protocols," Proceedings of the IEEE SOUTHEASTCON, Orlando, Florida, April 1983.
- Weaver, A. C., and Hall, K. B., "MEDIC: A Microcomputer Aid for Medical Diagnosis and Treatment," Hawaii International Conference on System Sciences, Honolulu, Hawaii, January 1982.
- Weaver, A. C., "A Microcomputer-based Model of Medical Decision Making in Ambulatory Care," Twelfth Annual Modeling and Simulation Conference, University of Pittsburgh, Pittsburgh, Pennsylvania, April 1981.
- Weaver, A. C., "Design of a Microcomputer Laboratory for Teaching Computer Science," Proceedings of the Computer Science Education Symposium, St. Louis, Missouri, February 1981.
- Weaver, A. C., "A Dynamically Reconfigurable Multiprocessor Network," Proceedings of the ACM Computer Science Conference, St. Louis, Missouri, February 1981.
- White, C. C., Wilson, E. C., and Weaver, A. C., "Computer-aided Diagnosis for Common Ambulatory Complaints," Fourth Annual Symposium on Computer Applications in Medical Care, Washington, D. C., November 1980.
- Weaver, A. C., White, C. C., and Wilson, E. C., "A Microcomputer-based Medical Decision Aid for Ambulatory Care," Proceedings of the Twelfth Annual Conference of the Society for Advanced Medical Systems, Bethesda, Maryland, November 1980.
- White, C. C., and Weaver, A. C., "Decision Aid Development for a Common Problem in Medical Diagnosis," Proceedings of the International Conference on Systems Science in Health Care, Montreal, Quebec, Canada, July 1980.
- Henry, Robert W., and Weaver, A. C., "Computational Procedures for Vector Criterion Markov Processes," Proceedings of the 19th Annual Technical Symposium, National Bureau of Standards, Gaithersburg, Maryland, June 1980.
- Taylor, John R., and Weaver, A. C., "A Checker-playing Algorithm for Multi-microprocessors," Proceedings of the 19th Annual Technical Symposium, National Bureau of Standards, Gaithersburg, Maryland, June 1980.



- Carson, Scott D., and Weaver, A. C., "STARNET: A Distributed Network for Resource Sharing and Parallel Processing with Microcomputers," Proceedings of the 19th Annual Technical Symposium, National Bureau of Standards, Gaithersburg, Maryland, June 1980.
- Weaver, A. C., "Distributed Process Control Architectures Using Microprocessors," Proceedings of the 3rd Rocky Mountain Symposium on Microprocessors, Fort Collins, Colorado, August 1979.
- Weaver, A. C., "Using Microcomputers to Teach Computer Science," SIGCSE Bulletin, Vol. 11, No. 1, February 1979, pp. 141-44.
- Weaver, A. C., "The Impact of Microprocessors on Industrial Process Control," Proceedings of the Republic of China--Republic of Korea Workshop on Microprocessor Devices and Applications, National Science Council of the Republic of China, Taipei, Taiwan, December 1978.
- Weaver, A. C., "A Real-time, Multi-task Programming Language for Microprocessor-Based Industrial Process Control," Proceedings of the ACM, Washington, D. C., December 1978.
- Weaver, A. C., "Microcomputer Architecture for Industrial Controls," Proceedings of the 2nd Annual Rocky Mountain Symposium on Microcomputers, Fort Collins, Colorado, August 1978.
- Weaver, A. C., "Microprocessors, Languages, and Industrial Control," Proceedings of the National Bureau of Standards 17th Annual Technical Symposium, Gaithersburg, Maryland, June 1978.
- Weaver, A. C., "Microcomputers in the Computer Science Curriculum," SIGCSE Bulletin, Vol. 10, No. 1, February 1978.
- Weaver, A. C., "A First Course in Microcomputers," Proceedings of the IEEE Workshop on Microprocessor Education, College Park, Maryland, November 1977.
- Weaver, A. C., "A Graphically-programmed, Microprocessor-based Industrial Controller," Proceedings of the Rocky Mountain Symposium on Microcomputers, Fort Collins, Colorado, August 1977, pp. 240-60.
- Weaver, A. C., "Process Control with Microprocessors," Proceedings of the North Central Regional ACM Conference, Urbana, Illinois, March 1977, pp. 38-43.
- Faiman, M., Catlin, R. W., and Weaver, A. C., "A Modular, Unified Microprocessor System (MUMS)," Proceedings of the DISE Workshop on Microprocessors and Education, Fort Collins, Colorado, August 1976, pp. 1-5.
- Weaver, A. C., "An Interactively Programmed Process Control System," Proceedings of the ACM Computer Science Conference, Washington, D. C., February 1975, p. 7.
- Weaver, A. C., "Intelligent Remote Terminals," Proceedings of the ACM Computer Science Conference, Detroit, Michigan, February 1974, p. 87.
- Weaver, A. C., "VIPTRAN--A Programming Language and Its Compiler for Boolean Systems," Proceedings of the ACM, Atlanta, Georgia, August 1973, p. 428.

#### 2.1.4 Technical Reports and Other Publications

- Weaver, Alfred C., "A Virtual Tour of the Internet," University of Virginia Darden Professional Seminars, 1999.
- Weaver, Alfred C., "Electronic Payment Models," University of Virginia Darden Professional Seminars, 1999.
- Weaver, Alfred C., "Privacy and Security on the Internet," University of Virginia Darden Professional Seminars, 1999.
- Weaver, Alfred C., "Future of the Internet," University of Virginia Darden Professional Seminars, 1999.
- Weaver, Alfred C., and Hirst, Kevin R., "Regional Issues Affecting Internet Usage," University of Virginia Darden Professional Seminars, 1999.
- Weaver, Alfred C., and Hirst, Kevin R., "Global Issues Surrounding Internet Usage," University of Virginia Darden Professional Seminars, 1999.
- Weaver, A. C., "The Internet and Electronic Commerce," IECON2000, Nagoya, Japan, Oct/Nov 2000.
- Lucas, Matthew T., Wrege, Dallas E., Dempsey, Bert J., and Weaver, Alfred C., "Statistical Characterization of Wide-Area Self-Similar Network Traffic," University of Virginia Technical Report CS96-21, 1996.
- Lucas, Matthew T., Dempsey, Bert J., and Weaver, Alfred C., "Distributed Error Recovery for Continuous Media in Wide-Area Multicast Networks," University of Virginia Technical Report CS95-52, 1996.
- Weaver, Alfred, French, James, Batson, Alan, Simoncic, Robert, Robins, Gabe, Dempsey, Bert, and Pausch, Randy, "Surfing the Internet," Community Information Report, 1995.
- Weaver, Alfred C., "The Jessica Project: Computing at UVa in the 21<sup>st</sup> Century," University Committee on Information Technology, 1995.
- Weaver, A. C., "High Performance Protocols for Factory Communications," IEEE Industrial Electronics Society Newsletter, September 1994.
- Grimshaw, Andrew S., Wulf, William A., French, James C., Weaver, Alfred C., Reynolds, Paul R., "Legion: The Next Logical Step Toward a Nationwide Virtual Computer," University of Virginia Technical Report CS-94-21, June, 1994.
- Street, Fraser, and Weaver, A. C., "A Video Mail Distribution System for Networked Personal Computers," Transfer, November/December 1993.
- Weaver, A. C., "Teleradiology Using XTP over ATM," Transfer, May/June 1993.
- Michel, J., Waterman, A.S., and Weaver, A. C., "Performance Evaluation of an Off-Host Communications Architecture," Transfer, March/April 1993.
- Dempsey, Bert, Fenton, John, Michel, Jeff, Waterman, Alex, and Weaver, Alfred. "SAFENET Internals," University of Virginia Technical Report CS-93-05, January 7, 1993.
- Dempsey, Bert J., Fenton, John C., Michel, Jeffrey R., Waterman, Alexander S., and Weaver, Alfred C., "A Performance Evaluation of the SAFENET Lightweight System," University of Virginia Technical Report CS-93-03, February 9, 1993.
- Dempsey, Bert J., Fenton, John C., Michel, Jeffrey R., Waterman, Alexander S., and Weaver, Alfred, "Ada Binding Reference Manual - SAFENET Lightweight Application Services," University of Virginia Technical Report CS-93-02, January 7, 1993.

Dempsey, Bert J., Michel, Jeffrey R., and Weaver, Alfred C., "Tutorial on UVA SAFENET Lightweight Communications Architecture," University of Virginia Technical Report CS-93-01, January 7, 1993.

Weaver, A. C., "Digitized Voice Distribution Using XTP and FDDI," Transfer, November/December 1992.

Weaver, A. C., "High Speed Communication for Distributed Applications," Transfer, September/October 1992.

Weaver, A. C., "XTP Platforms, Performance, User Interface, and Testing," Transfer, July/August 1992.

Chesson, G., Weaver, A. C., and Dempsey, B. J., "Communications Requirements for Technical Workstations," Transfer, May/June 1992.

Weaver, A. C., "XTP 3.6 Available," Transfer, September/October 1991.

Weaver, A. C., "Lessons Learned from Transport Protocol Design," Transfer, July/August 1991.

Weaver, A. C., "XTP 3.5 Available," Transfer, January/February 1991.

Weaver, A. C., "Xpress Transfer Protocol Summary," Transfer, September/October 1990.

Weaver, A. C., Simoncic, R., and Fenton, J.C., "XTP Demonstrations," Transfer, July/August 1990.

Dempsey, B.J., and Weaver, A. C., "Reliable Multicast for XTP," Transfer, May/June 1990.

Weaver, A. C., and Simoncic, R., "Experience with XTP," Transfer, May/June 1990.

Weaver, A.C., "XTP Status Report," Transfer, March/April 1990.

Weaver, A. C., Dempsey, B.J., and Strayer, W.T., "Evaluation of Reliable Multicast Protocols," Transfer, January/February 1990.

Weaver, A. C., Dempsey, B.J., and Strayer, W.T., "XTP Multicast Mechanisms," Transfer, November/December 1989.

Weaver, A. C., "Thoughts on Fast Protocols," Transfer, September/October 1989.

Weaver, A. C., Dempsey, B.J., and Strayer, W.T., "XTP Multicast Group Management," Transfer, September/October 1989.

Weaver, A. C., Dempsey, B.J., and Strayer, W.T., "Introduction to Multicast," Transfer, July/August 1989.

Weaver, A. C., and Simoncic, R., "Implementing XTP for the NASA Space Station," Transfer, March/April 1989.

Strayer, W. T., Mitchell, M., and Weaver, A. C., "ISO Protocol Performance Measurement," Transfer, January/February 1989.

Peden, J. H., and Weaver, A. C., "An Intuitive Approach to Priorities on Token Rings," Transfer, September/October 1988.

Simoncic, Robert, and Weaver, A. C., "SEANET: Real-Time Communications for Ships," Transfer, July/August 1988.

Weaver, A. C., Strayer, W. T., and Mitchell, M., "Why the World Needs Fast Transport," Transfer, May/June 1988.

Strayer, W. T., and Weaver, A. C., "Performance Comparison of MAP and EPA," Transfer, March/April 1988.

Weaver, A. C., "Communications for the NASA Space Station," Transfer, January/February 1988.

- Strayer, W. T., and Weaver, A. C., "Performance Analysis of Data Transfer in GM MAP," Department of Computer Science technical report, University of Virginia, October 27, 1987.
- Weaver, A. C., "A Real-Time Messaging System for Token Ring Networks," IEEE/ISA Joint Workshop, Houston, TX, March 1987.
- Weaver, A. C., "Local Area Networks and Busses: An Analysis," Flight Data Systems, NASA--Johnson Space Center, Houston, Texas, January 1987.
- Summers, C. F., and Weaver, A. C., "Performance of IEEE 802.4 -- the Basis of MAP," Department of Computer Science technical report TR-86-10, University of Virginia, April 28, 1986.
- Colvin, M. A., and Weaver, A. C., "Performance of Single Access Classes on the IEEE 802.4 Token Bus," Department of Computer Science technical report TR-86-09, April 23, 1986.
- Weaver, A. C., "A Highly Reliable LAN Protocol," Department of Computer Science technical report TR-86-08, University of Virginia, April 21, 1986.
- Colvin, M. A., Donnelly, T., Simoncic, R., and Weaver, A. C., "Ethernet Performance Analysis," Department of Computer Science research memo RM-86-01, University of Virginia, March 14, 1986.
- Weaver, A. C., "Local Area Computer Networks," Department of Computer Science research memo RM-85-07, University of Virginia, November 18, 1985.
- Summers, C. F., and Weaver, A. C., "Performance Analysis of the IEEE 802.4 Token Bus," Department of Computer Science research memo RM-85-06, University of Virginia, November 1985.
- Weaver, A. C., and Summers, C. F., "Performance Measurement for Local Area Networks," Department of Computer Science research memo RM-85-05, University of Virginia, November 8, 1985.
- Colvin, M. A., and Weaver, A. C., "Performance of Single Access Classes on the IEEE 802.4 Token Bus," Department of Computer Science technical report TR-85-21, University of Virginia, September 18, 1985.
- Summers, C. F., and Weaver, A. C., "The IEEE 802.4 Token Bus -- An Introduction and Performance Analysis," Department of Computer Science technical report TR-85-19, University of Virginia, August 26, 1985.
- Weaver, A. C., and Smith, M. J., "Communication on CSMA/CD Networks," Department of Computer Science report, University of Virginia, December 1984.
- Scott, J. A., and Weaver, A. C., "A Testbed for Distributed Operating System Development," Department of Computer Science technical report, University of Virginia, September 1984.
- Butler, D. W., and Weaver, A. C., "Fault-tolerant Protocols for Real-time Local Area Networks," Department of Computer Science technical report no. 84-04, University of Virginia, June 1984.
- Colvin, M. A., and Weaver, A. C., "Modeling the IEEE Token Bus," Department of Computer Science technical report no. 84-03, University of Virginia, May 1984.
- Weaver, A. C., "A High-Performance Fault-Tolerant Local Area Network," Department of Computer Science technical report no. 83-15, University of Virginia, October 1983.
- Albrecht, D. C., and Weaver, A. C., "Network Protocol Design: A Simulation Approach," Department of Computer Science technical report No. 82-09, University of Virginia, November 1982.
- Weaver, A. C., Albrecht, D. C., and Fischer, A. B., "NAPS: Network Access Protocol Simulator," Department of Computer Science technical report No. 82-06, University of Virginia, May 1982.

- Weaver, A. C., Lacy, A. M., and Stock, D. B., "High Level Languages for Process Control," Department of Computer Science technical report No. 82-01, University of Virginia, March 1982.
- Weaver, A. C., Fischer, A. B., and Albrecht, D. C., "Collision-free and Limited-contention Communications Protocols," Department of Computer Science technical report No. 81-18, University of Virginia, December 1981.
- Weaver, A. C., and Lacy, A. M., "On the Design of Programmable Controllers for Industrial Automation", Department of Computer Science technical report No. 81-17, University of Virginia, November 1981.
- Weaver, A. C., and Fischer, A. B., "A Survey of Contention-based Communications Networks," Department of Computer Science technical report No. 81-14, University of Virginia, August 1981.
- Weaver, A. C., and Lacy, A. M., "A Comparison of Five Microcomputer PASCAL Systems," Department of Computer Science technical report No. 81-10, University of Virginia, April 1981.
- Weaver, A. C., "Industrial Controller Software Meets Difficult Systems Needs," *Electronic Data News*, March 5, 1978, pp. 111-115.
- Conn, R. L., and Weaver, A. C., eds., "The Monitor Command System User's Manual," Department of Computer Science, University of Illinois, Report No. UIUCDCS-R-78-912, February 1978.
- Weaver, A. C., "A Graphically-programmed, Microprocessor-based Industrial Controller," Department of Computer Science, University of Illinois, Report No. UIUCDCS-R-77-865, May 1977.
- Weaver, A. C., "On-line Character Recognition," Department of Computer Science, University of Illinois, Report No. UIUCDCS-R-74-660, August 1974.
- Weaver, A. C., "Data Compression for Character Strings," Department of Computer Science, University of Illinois, Report No. UIUCDCS-R-74-659, July 1974.
- Weaver, A. C., Tindall, M. H., and Danielson, R. L., "A BASIC Language Interpreter for the Intel 8008 Microprocessor," Department of Computer Science, University of Illinois, Report No. UIUCDCS-R-74-658, June 1974.
- Weaver, A. C., "VIPTRAN2--An Improved Programming Language and Its Compiler for Process Control Equations," Department of Computer Science, University of Illinois, Report No. UIUCDCS-R-74-643, May 1974.
- Weaver, A. C., "VIPTRAN--A Programming Language and Its Compiler for Boolean Systems of Process Control Equations," Department of Computer Science, University of Illinois, Report No. UIUCDCS-R-73-603, November 1973.

## **2.2 Invited Lectures**

### **2.2.1 Meetings**

Weaver, A.C., Chen, X., and VanDyke, J., DemoFest 2004, Microsoft Faculty Summit, August 2004.

Weaver, A.C., Hu, J., Snyder, A.M., and VanDyke, J., DemoFest 2003, Microsoft Faculty Summit, August 2003.

Weaver, A. C., "Reliable Multicast and Reliable Group Management," Sun Microsystems, Palo Alto, California, July 20, 1999.

Weaver, A. C., Keynote Speaker, "Electronic Commerce on the Internet," IEEE Conference Emerging Technologies and Factory Automation, ETFA'96, Kauai, Hawaii, December 1996.

Weaver, A. C., "Xpress Transport Protocol," General Electric Research and Development Laboratory, Schenectady, New York, December 1996.

Weaver, A. C., "The Protocol Engine," MITRE Corporation, McLean, Virginia, May 26, 1988.

Weaver, A. C., "Computer Networks Research at the University of Virginia," Contel, Fairfax, Virginia, May 25, 1988.

Weaver, A. C., "Protocol Engine Project," TCP/IP Conference, Washington, D.C., December 1987.

Weaver, A. C., "An Experimental Real-Time Messaging System for Computer Networks," NASA-Johnson Space Center, December 12, 1986.

Weaver, A. C., "The IEEE Local Area Network Standards," Midwest Workshop on Communications Systems, Washington University, St. Louis, Missouri, November 20-21, 1986.

Weaver, A. C., "The ISO OSI Model for Computer Networks," Flight Data Systems, NASA-Johnson Space Center, August 23, 1986.

Weaver, A. C., "Computer Networking," ACM SIGMALL 81, Orlando, Florida, October 12-13, 1981.

Weaver, A. C., "Microcomputer Architecture for Distributed Processing," U. S. Army Research Office Symposium on Microcomputer Architecture, Wrightsville Beach, North Carolina, May 21-22, 1981.

Weaver, A. C., "Distributed Process Control Architectures Using Microprocessors," Rocky Mountain Symposium on Microcomputers, Fort Collins, Colorado, August 1979.

Weaver, A. C., "Teaching Computer Science with Microprocessors," East Central Region of the ACM Special Interest Group in Computer Science Education, University of Louisville, Louisville, Kentucky, May 1979.

Weaver, A. C., "The Impact of Microprocessors on Industrial Process Control," Republic of China - Republic of Korea Workshop on Microprocessor Devices and Applications, National Science Council of the Republic of China, Taipei, Taiwan, December 18-22, 1978.

### **2.2.2 Tutorials**

Weaver, A.C., "Industrial Informatics," IECON'03, Roanoke, VA, November 2003.

Weaver, A. C., "Factory Monitoring and Control Using the Internet," IECON'01, Denver, CO, December 2001.

Weaver, A.C., "Internet Commerce," NATO Fellowship, Bogazici University, Istanbul, Turkey, May 29, 2000.

- Weaver, A.C., "Internet Privacy and Security," NATO Fellowship Lecture, Bogazici University, Istanbul, Turkey, May 30, 2000.
- Weaver, A.C., "Critical Factors in Electronic Commerce," NATO Fellowship Lecture, Bogazici University, Istanbul, Turkey, June 1, 2000.
- Weaver, A. C., "The Internet, Electronic Commerce, and Factory Automation," IECON2000, Nagoya, Japan, Oct/Nov 2000.
- Weaver, A. C., "The Internet and Electronic Commerce," IECON2000, Nagoya, Japan, Oct/Nov 2000.
- Weaver, A. C., "Profiting from the Internet and the World Wide Web," IECON'98, Aachen, Germany, September 1998.
- Weaver, A. C., "The Internet and the World Wide Web," IECON'97, New Orleans, LA, November 1997.
- Weaver, A. C., "Electronic Commerce on the Internet," IECON'96, Taipei, Taiwan, August 1996.
- Weaver, A. C., "The Xpress Transport Protocol--Past, Present, and Future," Distributed Technology Exchange, NCCOSC RDT&E Division (NRaD), San Diego, CA, March 13-17, 1995.
- Weaver, A. C., Simoncic, R., and McNabb, J., "Protocols for Multimedia Applications," IEEE International Conference on Advanced Teleservices and High Speed Communications Architectures, Heidelberg, Germany, September 26-28, 1994.
- Weaver, A. C., Simoncic, R., and McNabb, J., "XTP: the Xpress Transfer Protocol," NCCOSC NRaD Workshop on Real-Time Distributed Systems, San Diego, CA, February 24, 1994.
- Strayer, W.T., Dempsey, B.J., and Weaver, A. C., "XTP: The Xpress Transfer Protocol," Navy Distributed Command and Control Meeting, University of Virginia, Charlottesville, VA, December 7, 1992.
- Strayer, W.T., Dempsey, B.J., and Weaver, A. C., "XTP: The Xpress Transfer Protocol," Local Computer Networks Conference, Minneapolis, MN, September 1992.
- Weaver, A. C., "XTP: The Xpress Transfer Protocol," Real Time Systems Symposium, Carnegie Mellon University, Pittsburgh, PA, August 1992.
- Strayer, W.T., Dempsey, B.J., and Weaver, A. C., "XTP: The Xpress Transfer Protocol," IEEE International Workshop on Advanced Communications, Munich, Germany, March 1992.
- Weaver, A. C., "High Speed Transfer Protocols," Wang Institute of Boston University, Boston, MA, May 17, 1991.
- Weaver, A. C., "Local Area Networks," Society of Photo-Optic and Instrumentation Engineers, Dallas, TX, May 9, 1991.
- Weaver, A. C., "Local Area Networks," IEEE Industrial Electronics Society IECON '89, Philadelphia, Pennsylvania, November 6, 1989.
- Weaver, A. C., "Local Area Networks," Society of Photo-Optic Instrumentation Engineers, Boston, Massachusetts, September 5, 1989.
- Weaver, A. C., "Local Area Networks," IEEE Industrial Electronics Society IECON '88, Singapore, October 24, 1988.
- Weaver, A. C., "Local Area Networks," Society of Photo-optic Instrumentation Engineers, Boston, Massachusetts, September 6, 1988.

- Weaver, A. C., "Local Area Networks," Society of Photo-optic Instrumentation Engineers, Detroit, Michigan, June 28, 1988.
- Weaver, A. C., "Local Area Networks," IEEE Industrial Electronics Society IECON '87, Cambridge, Massachusetts, November 2-6, 1987.
- Weaver, A. C., "Computer Networks," five Professional Development Seminars, Lockheed Engineering and Management Services Corporation, Houston, Texas, November-December 1986, and March-April, 1987.
- Weaver, A. C., "Computer Networks," IEEE ENIX-ASIA, Singapore, October 21, 1986.
- Weaver, A. C., "Computer Networks for Factory Communications," IEEE Industrial Electronics Society IECON '86, Milwaukee, Wisconsin, September 29, 1986.
- Weaver, A. C., "The OSI Reference Model for Computer Networks," NASA--Johnson Space Center, Houston, Texas, August 5, 1986.
- Weaver, A. C., "Local Area Networks," Sperry Corporation, Marine Systems Group, February 12-17, 1986.
- Weaver, A. C., "ISO and IEEE Models for Local Area Networks," NASA-Lewis Research Center, December 13, 1985.
- Weaver, A. C., "Local Area Computer Networks," IEEE Industrial Electronics Society IECON '85, San Francisco, California, November 18, 1985.
- Weaver, A. C., "Advanced Computer Networking," NASA-Lewis Research Center, Cleveland, Ohio, October 7, 1985.
- Weaver, A. C., "Computer Networks," NASA-Lewis Research Center, Cleveland, Ohio, July 24, 1985.
- Weaver, A. C., "Computer Networks for Beginners," NASA-Lewis Research Center, Cleveland, Ohio, July 2, 1985.
- Weaver, A. C., "Real-Time Local Area Networks," NASA-Lewis Research Center, Cleveland, Ohio, July 9, 1984.
- Weaver, A. C., "Local Area Computer Networks," NASA-Lewis Research Center, Cleveland, Ohio, April 8, 1984.
- Weaver, A. C., "Computer Networks," IEEE Industrial Electronics Society IECON '83, San Francisco, California, November 1983.
- Weaver, A. C., "Microcomputer Interfaces for Process Control," IEEE Industrial Electronics Society IECON '82, Palo Alto, California, November 19, 1982.
- Weaver, A. C., "Microcomputer Applications in Otolaryngology," Society of University Otolaryngologists, Washington, D. C., November 12, 1982.
- Weaver, A. C., "Industrial Control Using Microprocessors," IEEE Industrial Electronics Society IECON '81, San Francisco, California, November 1981.

### 2.2.3 Colloquia

- Weaver, A. C., "Distributed Computing at the Edge of the Internet," University of North Carolina at Wilmington, Wilmington, NC, April 12, 2002.
- Weaver, A. C., "Building a Successful and Secure Enterprise," RRTC Seminar 2000.
- Weaver, A. C., "Transitioning to Electronic Commerce: The EC Revolution," NATO Seminar, Istanbul, Turkey, June 2000.



Weaver, A. C., Allen, Brandt R., Simoncic, Robert, "Electronic Commerce on the Internet," CIT Headquarters, Herndon, VA, December 1, 1995.

Weaver, A. C., and Christie, R.W., "Design of an XTP-aware IP Router," Distributed Technology Exchange, NCCOSC, RDT&E Division (NRaD), San Diego, CA, March 13-17, 1995.

Weaver, A. C., Simoncic, R., and Dreke, C., "LynxOS and XTP Integration," Distributed Technology Exchange NCCOSC, RDT&E Division (NRaD), San Diego, CA, March 13-17, 1995.

Weaver, A. C., "Teleultrasound for the UVA Hospital," Department of Biomedical Engineering, University of Virginia, Charlottesville, VA, February 24, 1995.

Weaver, A. C., "High Speed Transport Protocols," Department of Systems Engineering, University of Virginia, October 1992.

Weaver, A. C., "The Xpress Transfer Protocol," MCNC, Research Triangle Park, NC, September 16, 1991.

Weaver, A. C., "Local Area Networks for Real-time Systems," Department of Computer Science, Virginia Tech, Blacksburg, Virginia, November 9, 1988.

Weaver, A. C., "The IEEE Local Area Network Standards," Department of Computer Science, Washington University, St. Louis, Missouri, October 23, 1985.

Weaver, A. C., "Local Area Networks," Institute for Defense Analyses, Alexandria, Virginia, July 9, 1985.

Weaver, A. C., "Trends in Local Area Network Design," Distinguished Lecturer Series, Florida Atlantic University, Boca Raton, Florida, November 15, 1984.

Weaver, A. C., "Real-Time Computer Communication Networks," Department of Computer Science, Washington University St. Louis, Missouri, April 1983.

Weaver, A. C., Knight, J. C., Pratt, T. W., and Reynolds, P. F., "The Critical Real-Time Systems Laboratory," NASA-Langley Research Center, Hampton, Virginia, November 5, 1982.

Weaver, A. C., Knight, J. C., Pratt, T. W., and Reynolds, P. F., "The Critical Real-Time Systems Laboratory," General Electric Co., Charlottesville, Virginia, October 29, 1982.

Weaver, A. C., "Microcomputer Networks," Department of Biomedical Engineering, University of Virginia, Charlottesville, Virginia, October 1982.

Weaver, A. C., "Microcomputer Applications," Junior Science and Humanities Symposium, University of Virginia, Charlottesville, Virginia, March 1, 1982.

Weaver, A. C., "Issues in Computer Communication Network Design," General Instruments Corporation, Baltimore, Maryland, July 23, 1981.

Weaver, A. C., "Medical Decision Making Using Microcomputers," Department of Electrical Engineering and Computer Science, University of Santa Clara, Santa Clara, California, May 29, 1980.

Weaver, A. C., "Quantitative Medical Decision Aids Utilizing Microprocessors," Department of Computer Science, Washington University, St. Louis, Missouri, April 1979.

Weaver, A. C., "Fundamentals of Computer Science," Bath County Program for the Gifted, Hot Springs, Virginia, March 9-10, 1979.

Weaver, A. C., "Microprocessors and Industrial Process Control," NASA-Langley Research Center, Hampton, Virginia, February 1979.

Weaver, A. C., "Industrial Control and Microprocessor Technology," Department of Computer Science, Pennsylvania State University, University Park, Pennsylvania, January 1979.

Weaver, A. C., "Microprocessors and Microcomputers," Department of Management Analysis and Systems Development, Office of the Governor, Richmond, Virginia, December 1978.

Weaver, A. C., "Using Microcomputers to Teach Computer Science," Virginia Association of Educational Data Systems, Richmond, Virginia, September 1978.

#### **2.2.4 ACM National Lectures -- 1986-1989**

University of Houston  
University of Houston at Clear Lake  
Houston ACM Chapter  
Old Dominion University  
Milwaukee ACM Chapter  
University of Wisconsin at Eau Claire  
Chicago ACM Chapter  
Cincinnati ACM Chapter  
Columbus ACM Chapter  
Dayton ACM Chapter  
Tulane University  
Louisiana State University  
Vanderbilt University  
Colorado State University  
Pikes Peak Colorado Chapter  
Wright State University  
Indiana University  
Purdue University  
Central Indiana Chapter  
Baltimore ACM Chapter  
University of Wisconsin at La Crosse  
University of Wisconsin at Platteville  
Clarke College  
College of William and Mary  
Old Dominion University

### **3. UNIVERSITY SERVICE (University of Virginia)**

#### **3.1 Administrative**

Chairman, Department of Computer Science, 1984-85

Director, Computer Science Corporate Partners Program, Department of Computer Science, 2000 –

#### **3.2 Committees**

University Committee on Promotion and Tenure, 2003-06

UVA Faculty Senate, 2001-06

Chair, SEAS Faculty Council, 2002-04

University Committee on Information Technology, 2003--

Chair, SEAS Promotion and Tenure Committee, 1998-99

SEAS Promotion and Tenure Committee, 1996 – 1999.

Whitaker Executive Committee, Biomedical Engineering, 1998 – 2000.

UVA Digital Directions Speaker's Series, 1997 – 2000.

Biomedical Engineering Chair Review, 1997.

University Committee on Information Technology (UCIT), 1995--

UCIT Subcommittee Chair on Multimedia Technology, 1995 – 1996.

Vice-President's Committee on UVA Networking, 1995 – 1999.

Graduate Studies Committee, 1994 – 1997.

Graduate Admissions Committee, 1991 – 1993.

University Computer Policy Committee, 1988 – 1991.

Computer Facilities Committee, 1989 – 1995.

Chairman, Computer Science Computer Policy Committee, 1987 – 1988.

Dean's Research Advisory Committee, 1986 – 1988.

Research Director, Department of Computer Science, 1985 – 1987.

Faculty Forum for Scientific Research, 1983 – 1984.

SEAS Ad Hoc Committee on Computing, 1978 – 1981.

SEAS Computers and Engineering Advisory Committee, 1978 – 1981.

SEAS Open House Committee, 1978 – 1982.

Academic Computing Center Committee for Hardware Evaluation, 1981 – 1982.

Academic Computing Center Committee on Local Data Networks, 1980 – 1981.

Vice-President's Committee on Office Automation, 1980.

University Committee on Microcomputer Selection, 1982.

University Committee on Computers, 1978-82.

#### **3.3 Instruction**

Computer Science 101 - Introduction to C++ Program Design

Computer Science 120 - Introduction to Business Computing

Computer Science 270 - Pascal Programming

Computer Science 352 - Advanced Programming and Data Structures

Computer Science 361 - Computer Organization and Assembly Language Programming

Computer Science 384 - Microcomputer Laboratory

Computer Science 453 - Electronic Commerce Technologies

Computer Science 454 - Operating Systems

Computer Science 484 - Digital Computer Systems Laboratory

Computer Science 457 - Computer Networks

Computer Science 551 - Electronic Commerce

Computer Science 551 - Federated Trust Systems

Computer Science 584 - Microcomputer Systems Design

Computer Science 651 - Federated Trust Systems

Computer Science 656 - Operating Systems

Computer Science 755 - Operating Systems

Computer Science 757 - Computer Networks  
Computer Science 851 - Local Area Networks  
Computer Science 851 - Advanced Computer Networks  
ENGR 390 – Electronic Commerce (Rodman Seminar Series)

#### **4. SPONSORED RESEARCH**

##### **4.1 Government- and Industry-Sponsored Research**

Weaver, A.C., "Advancing Cyber Security via .NET," Microsoft Research, \$200,000, 2004-06.

Weaver, A.C., "IT Education in Virginia," National Science Foundation, subcontract to Virginia Community College System, \$33,113 (\$200,000 total), 2003-04.

Weaver, A. C., "Wireless Devices and Web Services in the CS Curriculum," Microsoft Research, \$30,000, 2003-04.

Weaver, A.C., "Federated, Secure Trust Networks for Distributed Healthcare IT Services," Microsoft Research, \$200,000, 2002-04.

Weaver, A.C., Teaching + Technology Initiative: A Virtual Laboratory for Electronic Commerce, U.Va., 8/26/02—8/25/04, \$20,000.

Weaver, A. C., "Laboratory for Electronic Commerce," National Science Foundation, 12/1/01 - 11/30/03, \$75,000.

Weaver, A. C., "MatchMaker 2002," Virginia's Center for Innovative Technology, 12/1/01 - 11/30/02, \$30,000.

Weaver, A. C., French, J.C., "Internet Technology Innovation Center," Virginia's Center for Innovative Technology, 9/1/98—6/30/04, \$2,500,000.

Weaver, A. C., "Common Infrastructure Design and Benchmarking," Lockheed Martin, 3/1/01 - 2/28/02, \$50,000.

Weaver, A. C., "Web-based Employee Training," American Woodmark, 8/1/00 - 7/31/01, \$5,000.

Weaver, A. C., "Benchmarking Industry Best Practices," NetGuilds, Inc., 3/1/01 - 2/28/02, \$50,000.

Weaver, A. C., French, J.C., "Internet Visioning for Advance Auto," Advance Auto, 1/7/00 - 12/29/00, \$18,000.

Weaver, A. C., "Porting Matchmaker to SQL/ Matchmaker Enhancements," Virginia's Center for Innovative Technology, 12/1/00 - 01/30/01, \$50,000.

Weaver, A. C., "Intelligent Internet Search Agent," Pete Brothers, 06/30/00 - 05/31/01, \$6,000.

Weaver, A. C., "Intelligent Internet Search Agent," Virginia's Center for Innovative Technology, 06/30/00 - 05/31/01, \$24,000.

Weaver, A. C., "Outreach Virginia," Office of the Vice-President for Research and Public Service, 7/26/99 - 6/30/00, \$12,000.

Weaver, A. C., "MatchMaker2000," Virginia's Center for Innovative Technology, 03/01/00 - 02/28/01, \$30,000.

Weaver, A. C., "MatchMaker," Virginia's Center for Innovative Technology, 7/1/99 - 6/30/00, \$30,000.

Weaver, A. C., "Virginia IT&T Resources Database," Virginia's Center for Innovative Technology, 7/1/99 - 12/31/00, \$30,000.

Weaver, A. C., "Brainpower for Business Market Study," Virginia's Center for Innovative Technology, 6/1/99--5/31/00, \$10,000.

Weaver, A. C., "Aerospace and Transportation Technologies Website," Virginia's Center for Innovative Technology, 12/1/98--11/30/99, \$6,000.

Weaver, A. C., "Web Enabled Corporate Database Design," Virginia's Center for Innovative Technology, 6/1/98--5/31/00, \$20,000.

Weaver, A. C., "Implementation of the CIT Corporate Database," Virginia's Center for Innovative Technology, 6/1/98--5/31/00, \$55,000.

Weaver, A. C., "Corporate Database Implementation on the WWW," Virginia's Center for Innovative Technology, 6/1/98--5/31/00, \$55,000.

Weaver, A. C., "Client Registration System," Virginia's Center for Innovative Technology, 6/1/98--12/31/99, \$30,000.

Weaver, A. C., "Internet Software Laboratory," Virginia's Center for Innovative Technology, 7/1/98--12/31/99, \$49,738.

Weaver, A. C., "Electronic Survey of CIT's Economic Impact," Virginia's Center for Innovative Technology, 5/1/98--4/30/99, \$21,985.

Weaver, A. C., "Expansion of Brainpower for Business," Virginia's Center for Innovative Technology, 5/1/97--12/31/98, \$13,700.

Weaver, A. C., "BusinessBuilder: Tools for Electronic Commerce," Virginia's Center for Innovative Technology, 7/1/97--6/30/99, \$95,000.

Weaver, A. C., "MatchMaker: Expanding the Technology Workforce," Virginia's Center for Innovative Technology, 7/1/97--6/30/99, \$95,000.

Weaver, A. C., "WWW Business Innovations Contest," Virginia's Center for Innovative Technology, 7/96--6/97, \$40,000.

Weaver, A. C., "Establishing a Regional IT&T Economy for Central Virginia," Virginia's Center for Innovative Technology, 11/1/96--5/31/97, \$1,200.

Weaver, A. C., "Focus Group on Workforce Education," Virginia's Center for Innovative Technology, 11/16/96--5/31/97, \$500.

Weaver, A. C., "CIT Technology Institute," Virginia's Center for Innovative Technology, 7/96--6/97, \$58,500.

Weaver, A. C., and Grimshaw, A.S., "Real-Time Communications for Distributed Systems," Office of Naval Research, 9/95--9/96, \$200,000.

Jokl, James A., Grimshaw, A.S., Liebeherr, J., and Weaver, A. C., "Networks, Middleware, and Applications for Next Generation Metasystems," National Science Foundation, 2/1/97--1/31/99, \$350,000.

Weaver, A. C., "Brainpower for Business," Virginia's Center for Innovative Technology, 5/1/97--4/30/98, \$40,000.

Weaver, A. C., "Information Powersource," Virginia's Center for Innovative Technology, 02/01/97- 01/31/98, \$41,932.

Weaver, A. C., "InterCom - The Internet Commerce Project," Virginia's Center for Innovative Technology, 6/1/96-5/31/97, \$84,724.

Weaver, A. C., French, J.C., and Liebeherr, J., "Virginia Business Intellectual Resources Guide," Virginia's Center for Innovative Technology, 2/1/96--1/31/97, \$50,828.

Grimshaw, A.S., Wulf, W., Weaver, A. C., and French, J.C., "Legion: the Next Logical Step Toward a Nationwide Virtual Computer," Advanced Research Projects Agency, 7/1/96--6/30/99, \$2,414,473.

Weaver, A. C., and Grimshaw, A., "Distributed Computing and Communications," Office of Naval Research, 4/1/95--9/30/96, \$200,000.

Weaver, A. C., "Secure Electronic Commerce," Crutchfield Corporation, 2/8/96--2/7/97, \$27,500.

Weaver, A. C., "Institute of Information Technology and Telecommunications," Virginia's Center for Innovative Technology, 1/1/96--6/30/96, \$23,000.

Weaver, A. C., "Institute of Information Technology and Telecommunications," Virginia's Center for Innovative Technology, 7/1/95--12/31/95, \$20,000.

Weaver, A. C., "Developing a WWW Presence for CIT," Virginia's Center for Innovative Technology, 9/1/95--3/30/96, \$12,000.

Weaver, A. C., "Virginia Technology Resources," Virginia's Center for Innovative Technology, 9/1/95--3/30/96, \$6,500.

Weaver, A. C., "Communications Support for Telemedicine," Virginia's Center for Innovative Technology, 7/1/94--6/30/95, \$50,000.

Weaver, A. C., "Communications Support for Telemedicine," Mystech Inc. and U.S. Army, 5/1/94--8/30/95, \$263,000.

Weaver, A. C., "Real-Time Communications for Distributed Systems," NCCOSC NRad and Office of Naval Research, 6/1/94--9/30/95, \$330,000.

Weaver, A. C., "Video Mail System for Personal Computers," Virginia's Center for Innovative Technology, 1/1/93--12/31/93, \$40,000.

Weaver, A. C., "Developing the Xpress Transfer Protocol for the IBM RISC System 6000," Virginia's Center for Innovative Technology, 1/1/93--12/31/93, \$70,000.

Weaver, A. C., "Video Mail System," SAIC, 9/1/92--1/31/93, \$40,000.

Weaver, A. C., "Development of an Ada User Interface and the Xpress Transfer Protocol for DTC-2 and SAFENET II," Office of Naval Research, 9/1/91--9/30/93, \$368,500.

Weaver, A. C., "A Feasibility Study of Digitized Voice Distribution via the Xpress Transfer Protocol," Virginia Center for Innovative Technology, 11/1/91--10/31/92, \$29,025.

Weaver, A. C., "A Feasibility Study of Digitized Voice Distribution via the Xpress Transfer Protocol," E-Systems, Inc., 7/18/91--11/30/91, \$45,000.

Weaver, A. C., "Developing the Xpress Transfer Protocol for the IBM RISC System 6000," International Business Machines, 7/18/91--7/31/93, \$140,000.

Weaver, A. C., "Communications Services for Real-Time Systems," Office of Naval Research, 4/1/91--3/31/92, \$118,000.

Weaver, A. C., "Enhancing the Xpress Transfer Protocol for Use in SAFENET," Office of Naval Research, 10/1/90--9/30/91, \$50,000.

Jones, A. K., et al., "End-to-End Systems Design," National Science Foundation, 7/1/90--6/30/94, \$5,600,000.

Weaver, A. C., "SAFENET: A Real-Time Local Area Network for Military and Commercial Ships," Sperry Marine Inc., 4/1/90--3/31/91, \$40,000.

Weaver, A. C., "Design of a SeaNET-to-SAFENET Bridge," Virginia Center for Innovative Technology, 8/1/90--7/31/91, \$26,316.

Weaver, A. C., "Design, Implementation, and Performance Measurement of the Xpress Transfer Protocol for SAFENET," Office of Naval Research, 10/1/89--9/30/90, \$120,882.

Weaver, A. C., "SAFENET: A Real-Time Communications Network for Military Ships," Virginia Center for Innovative Technology, 6/1/89--5/30/90, \$71,858.

Weaver, A. C., "SAFENET: A Real-Time Communications Network for Military and Commercial Ships," Sperry Marine Inc., 4/1/89--3/31/90, \$99,859.

Cook, R. P., Son, S. H., and Weaver, A. C., "The Starlite Project: Prototyping Real-time Software - Operating Systems, Communications Networks, Database Systems," Office of Naval Research, 10/1/88--9/30/90, \$322,512.

Weaver, A. C., "Real-Time Communications Using Local Area Networks," Naval Surface Warfare Center, 5/1/89--9/30/89, \$25,900.

Weaver, A. C., "Evaluation of the Xpress Transfer Protocol," Naval Surface Warfare Center, 2/16/89--9/30/89, \$45,494.

Weaver, A. C., "High-Speed Local Area Networks," Proteon Corporation, equipment donation, \$10,000.

Brown, D. E., Weaver, A. C., and Wiener, D. F., "Data Fusion Systems," Virginia Center for Innovative Technology, 1/1/89--12/31/89, \$19,084.

Brown, D. E., Weaver, A. C., and Wiener, D. F., "Data Fusion Systems," Ford Aerospace, 1/1/89--12/31/89, \$25,000.

Pausch, R. A., and Weaver, A. C., "Performance Analysis Tools for Local Area Networks, Virginia Center for Innovative Technology, 10/1/88--9/30/91, \$20,184.

Weaver, A. C., "Performance Analysis Tools for Local Area Networks," Contel Federal Systems, Fairfax, Virginia, 10/1/88--9/30/91, \$30,074.

Weaver, A. C., "SHIPNET: Real-time Communications for Ships," Institute for Information Technology, Virginia Center for Innovative Technology, 6/1/88--5/31/89, \$64,000.

Weaver, A. C., "Performance Analysis of Intel MAP," Intel Corporation, equipment donation, 2/1/88--1/31/89, \$26,900.

Weaver, A. C., "A Fiber Optic Token Ring Local Area Network to Support Real-Time Control Systems for Aircraft," NASA-Lewis Research Center, 2/1/88--1/15/89, \$40,000.

Weaver, A. C., "A Prototype Network for Ships," Sperry Marine Inc., 1/1/88--3/31/89, \$54,868.

Weaver, A. C., "Requirements and Specifications for a Real-Time Transport Protocol," National Bureau of Standards, 12/1/87--12/31/88, \$50,000.

Weaver, A. C., "A Token Ring Network for Ships," Institute of Information Technology, Virginia Center for Innovative Technology, 9/1/87--12/31/88, \$27,030.

Pratt, T. W., Reynolds, P. F., Brown, D., Cohoon, J. P., Davidson, J. W., Ortega, J. M., Pfaltz, J. L., Richards, D. S., Wartik, S. P., and Weaver, A. C., "Development Plans for an Institute for Parallel Computation," Jet Propulsion Laboratory, 7/1/87--6/30/88, \$999,999.

Weaver, A. C., "A Prototype Network for Ships," Sperry Marine, Inc., 4/1/87--12/31/87, \$27,030.

Weaver, A. C., "Performance Measurement of the GM MAP Protocol," Intel Corporation, computer equipment, 11/1/86--10/30/88, \$78,000.

Pratt, T., Reynolds, P. F., Weaver, A. C., et al, "A Research Center for Parallel Computing at the University of Virginia," Joint Tactical Fusion Office, Department of Defense, 9/1/86--1/15/87, \$99,000.

Weaver, A. C., "Developing a Token Ring Network for Ships," Proteon, Inc., Natick, Massachusetts, 7/1/86--8/31/87, \$43,925.

Weaver, A. C., "A Shipboard Local Area Network," Institute of Information Technology, Virginia Center for Innovative Technology, 7/1/86--8/31/88, \$50,476.

Weaver, A. C., "A Prototype Network for Ships," Marine Systems Division, Sperry Corporation, 5/1/86--3/31/87, \$54,101.

Weaver, A. C., "A Computer Science Laboratory for Operating Systems Design," Academic Computing Center Support Program, University of Virginia, 7/1/86--6/30/87, \$60,709.

Cook, R. P., Cohoon, J. P., Davidson, J. W., Knight, J. C., Pratt, T. W., Reynolds, P. F., and Weaver, A. C., "Equipment for Computer Science," National Science Foundation, 9/1/85--8/31/86, \$315,910.

Weaver, A. C., "Experiments in Distributed Computing," Institute for Defense Analyses, 5/28/85--12/31/85, \$20,000.

Weaver, A. C., "Local Area Network Performance Modeling," Naval Surface Weapons Center, 4/1/85--5/31/86, \$37,231.

Weaver, A. C., "A Research Center for Automated Local Area Network Performance Measurement," Virginia Center for Innovative Technology, Institute for Information Technology, 7/1/85--12/31/86, \$136,604.

Weaver, A. C., "A Research Center for Automated Local Area Network Performance Measurement," computer equipment, Intel Corporation, 7/1/85--6/30/87, \$123,280.

Weaver, A. C., "Fault-Tolerant Real-Time Communications Systems," NASA-Lewis Research Center, 6/16/85--6/15/86, \$45,000.

Weaver, A. C., "Computer Communication Networks for Hierarchical Control," NASA-Lewis Research Center, 4/1/85--5/31/86, \$60,000.

Weaver, A. C., "Real-Time Computer Network Communications Protocols," Virginia Center for Innovative Technology, Institute for Information Technology, 12/1/84--5/31/86, \$60,600.

Weaver, A. C., "Modeling the IEEE 802.5 Token Ring," Fairchild Communications and Electronics Company, 3/1/85--12/31/85, \$50,000.

Weaver, A. C., "Real-Time Fault-Tolerant Local Area Networks," computer equipment, Intel Corporation, 1/1/85--12/31/85, \$20,000.



Weaver, A. C., "Real-Time Communications for Control Systems," Dynamics and Controls Branch, NASA-Lewis Research Center, 4/1/84--5/31/85, \$68,993.

Weaver, A. C., "Modeling the IEEE 802.4 Token Bus Protocol," General Electric Company, 1/1/84--12/31/84, \$50,000.

Weaver, A. C., "Fault-Tolerant Communications Protocols," Fairchild Communications and Electronics, 1/1/84--12/31/84, \$50,000.

Weaver, A. C., "Performance Measurement of Ada on the Intel 432," Fairchild Communications and Electronics Company, 7/1/83--12/31/83, \$14,500.

Weaver, A. C., "Real-time Computer Systems for Industrial Automation," General Electric Company, 1/1/83-12/31/83, \$25,000.

Weaver, A. C., "Intel iAPX 432 Research Equipment," computer equipment, Intel Corporation, March 1983, \$136,000.

Weaver, A. C., "Communications Protocols for Avionics Busses," Fairchild Space and Electronics Company, 1/1/83-12/31/83, \$67,500.

Weaver, A. C., "Microcomputer Architecture and Programming Languages for Industrial Process Controllers," General Electric Company, 5/1/82-12/31/82, \$25,000.

Weaver, A. C., "Data Communications for Avionics Buses," Fairchild Space and Electronics Company, 5/1/82-12/31/82, \$45,000.

Weaver, A. C., "Microcomputer Architectures for Industrial Control," General Electric Company, 6/15/81-5/31/82, \$25,000.

Weaver, A. C., "Data Communications for Multi-microprocessors," Fairchild Space and Electronics, 3/1/81-5/31/82, \$50,000.

Weaver, A. C., "Teaching Computer Organization and Assembly Language Programming with Microcomputers," National Science Foundation, 4/1/80-9/30/82, \$29,960.

Weaver, A. C., "Quantitative Medical Decision Analysis," National Center for Health Services Research, 9/1/79-8/31/80, \$8,959.

Weaver, A. C., "A Microcomputer-based Teaching Laboratory for Computer Science," National Science Foundation, 10/1/79-3/31/82, \$38,000.

White, C. C., and Weaver, A. C., "The Application of Quantitative Medical Decision Aids to Medicine," National Institute for Health Services Research, 8/1/78-8/31/79, \$10,000.

#### **4.2 Industry Gifts**

Weaver, A. C., "NetEdge Computing," Intel Corporation, \$60,000, Fall 2002.

Weaver, A. C., IBM T23 laptop to support .NET computing, Microsoft Corporation, \$5,000, February 2002.

Weaver, A. C., computing equipment from Microsoft Corporation, \$10,000, Fall 2002.

## 5. GRADUATE STUDENT DIRECTION

### 5.1 Ph.D. dissertations directed:

Wu, Zhengping, *Trust Establishment and Management in Federated Systems*, in progress.

Lucas, Matthew T., *Efficient Data Distribution in Large-Scale Multicast Networks*, May 1998.

Dempsey, Bert J., *Retransmission-Based Error Control for Continuous Media Traffic in Packet-Switched Networks*, May 1994.

Strayer, W. Timothy, *Function-based Scheduling Theory*, May 1992.

Peden, Jeffery H., *Queueing Models for Token and Slotting Ring Networks*, August 1991.

Schult, Nancy L. (co-advisor with T. M. Sigmon), *Analytic Models of Token Ring Networks*, January 1989.

Pennell, James, *Message Value Metrics: A Technique for Flow Control in Computer Networks*, January 1988.

Yancey, John, *Object Allocation in Distributed Real-Time Systems*, May 1986.

### 5.2 Master of Science theses directed:

Calandrino, Joseph, in progress.

Bui, Paul, in progress.

Garback, Brian, in progress.

Snyder, Andrew M., *Performance Measurement and Workflow Impact of Securing Medical Data Using HIPAA Compliant Encryption in a .NET Environment*, August 2003.

Sublett, John, *Design of a Teleultrasound System*, May 1996.

Michel, Jeffrey, *Off-Host Communications Architectures*, August 1993.

Dempsey, Bert J., *Design and Analysis of Reliable Transport Multicast*, January 1991.

Fenton, John C., *User Interface for the Xpress Transfer Protocol: Design and Analysis*, January 1991.

Harvey, James D., *An Implementation and Analysis of Abstract Syntax Notation One and Basic Encoding Rules*, August 1989.

Minnich, David W., *Performance Analysis of SAE AE-9B High Speed Ring Bus*, August 1988.

Simonson, Randy H., *Performance Analysis of FDDI*, May 1988.

Strayer, W. Timothy, *Performance Analysis of GM MAP*, January 1988.

Peden, Jeffery, *Performance Evaluation of the IEEE 802.5 Token Ring*, January 1987.

Gorur, R. Mangala, *Performance Analysis of the IEEE 802.4 Token Bus*, January 1987.

Summers, Catherine F., *Performance Analysis of the IEEE 802.4 Token Bus Protocol*, May 1985.

Scott, John, *A Testbed for Distributed Operating System Development*, September 1984.

Butler, David, *Fault-Tolerant Protocols for Real-Time Local Area Networks*, May 1984.

Colvin, M. Alex, *Modeling the IEEE Token Bus*, May 1984.

Smith, Mark J. A., *Microcomputer Network for Communications Protocol Experiments*, January 1984.

Holford, John P., *Optimal Compilation of Relay Ladder Diagrams*, June 1983.

Albrecht, David C., *Network Protocol Design - A Simulation Approach*, December 1982.

Hall, Kenneth B., *A Quantitative Medical Decision-Making Aid for the Prototypical Complaint Diarrhea*, December 1981.

Methvin, David W., *A Unified Network Operating System*, May 1981.

Carson, Scott D., *A Microcomputer STAR Network*, January 1981.

Wyatt, Joseph, R., *Computer Automation in the Nuclear Manufacturing Industry*, January 1980.

Greiner, Mark A., *Hardware/Software Tradeoffs in Industrial Process Controller Design*, University of Illinois, October 1979 (co-directed with T. A. Murrell).

Bryant, Robert M., *A Real-time, Multi-tasking Sequence Controller for Industrial Processes*, University of Illinois, May 1979 (co-directed with T. A. Murrell).

Beiser, Paul S., *Finite Segment P-adic Arithmetic*, December 1978.

Conn, Richard L., *ARIAN - An Operating System for Microcomputers*, University of Illinois, May 1978.

Blanton, Robert E., *A Cross-Assembler/Simulator for a Microprocessor-based Industrial Controller*, University of Illinois, July 1977.

### **5.3 Master of Computer Science projects directed:**

Chen, Xiohui, *Authorization Rule Engine* (in progress).

Hu, Junzhe, *Dynamic, Context-Aware Access Control*, August 2004.

Talbert, Scott, *Performance of the Real-Time Event Channel of the TAO ORB for Combat Networks*, May 2002.

Nguyen, Quang, *Data Encryption Standard Animation*, January 2000.

Viswanathan, Arvind, *Teleultrasound*, May 1997.

Lucas, Matthew T., *An Empirical Study of Packetized Voice Distribution Over a Campus Network*, May 1995.

Dreke, Christopher, *Xpress Transport Protocol*, August 1994.

Christie, Robert, *An XTP-Aware IP Router*, May 1994.

Hines, Robert, *Telemedicine Workstation Using ATM Networks*, August 1994.

Street, Fraser, *"Design and Implementation of a Video Mail System"*, May 1994.

Werme, Paul, *Navy Combat Simulation System*, May 1992.

Sanders, Robert, *Performance Analysis of the Xpress Transfer Protocol*, M. C. S. project, Department of Computer Science, University of Virginia, January 1990.

Davis, Timothy, *Video Image Distribution Using Local Area Networks* August 1989.

Phillips, Kelly, *Graphics Interface for the FDDI Simulation System* May 1989.

Mitchell, Melinda, *Performance Measurements of MAP and TOP*, May 1989.

Cain, Brendan G., *A Real-Time Local Area Network for On-board Aircraft Control*, August 1988.

Garland, Douglas, *Analytic Models of Hierarchical Local Area Networks*, August 1987.

Wilson, Patricia A., *Performance Evaluation of the Intel iAPX 432*, May 1984.

Ivie, Mark, *A Parametric Study of Hybrid Communications Protocols*, August 1983.

Fischer, Anna B., *Analytic Models for Hybrid Communications Protocols*, May 1983.

Schramm, D. M., *A Graphic Compiler for Relay Ladder Diagrams*, January 1983.

Hartley, J. B., *A Retargetable Translator for a Virtual Process Control Computer*, January 1983.

Stock, Donald B., *A Survey of High-Level Languages for Process Control*, January 1982.

Wellons, Steven O., *A Microcomputer-based Accounting System*, M. C. S. project, May 1980.

Updated September 16, 2004.